CRESTED BUTTE FIRE PROTECTION DISTRICT BOARD
OF DIRECTORS REGULAR MEETING
Station 2
751 Gothic Road, Mt. Crested Butte, CO 81225
Tuesday July 11, 2023 5:15 PM

5:15 CALL REGULAR MEETING TO ORDER

1. Introduction of Guests
    a. Todd Goulding – Goulding Development Advisors

2. Review / Changes to Agenda

5:20 CONSENT AGENDA

1. Approval of minutes June 20, 2023 regular meeting
2. Approval of monthly financial reports

5:25 FIRE PREVENTION REPORT

5:35 EMS & FIRE CHIEF REPORT

1. Operations and Staffing Report
    a. Paramedic Recruitment
    b. Vehicle Updates

5:50 CHIEF EXECUTIVE REPORT

1. 2022 Audit Review and Approval

5:55 PUBLIC COMMENT

6:00 OLD / UNFINISHSED BUSINESS

1. Emergency Services Campus Update – Caffrey / Goulding
    a. Review and Approve Updated Project Budget
    b. Review and Approve Schematic Design
2. Larksppur Update – Caffrey
    a. Review and approve Larkspur Documents
    b. Review and Approve Purchase Agreement & Resolution

6:15 NEW BUSNESS

1. Butte Avenue Bridge, Road & Addressing Standards Discussion

6:25 UNSCHEDULED BUSINESS AND BOARD MEMBER COMMENTS

6:30 ADJOURNMENT

Online Meeting Information
https://zoom.us/j/9703495333?pwd=ZUlNRFBCL253UzlxSGNhQ0laS29TQT09
One Tap Mobile +16699009128,,9703495333# US (San Jose)
+1 312 626 6799 US (Chicago) - Meeting ID: 970 349 5333
Password: 5333

CRESTED BUTTE FIRE PROTECTION DISTRICT
MINUTES OF REGULAR MEETING
Mt. Crested Butte Fire Station 2
Tuesday, June 20, 2023
Approved _____

Attendance

Board Members Present: Chris McCann, Jack Dietrich, Ken Lodovico, Tina Kempin, Eric Tunkey
Staff, Volunteers and Public: Sean Caffrey, Robert Weisbaum, Annie Tunkey, Ric Ems, Joe Wonnacott, Beth Shaner, Ty Sweitzer, Tara Sweitzer, C-Shift, Evan Sandstrom, Amie Bielak and family, Mike Reily, Liam Reily

Changes to Agenda

Meeting called to order at 5:15 pm by Board Chairman Chris McCann.
There were no changes to the agenda.

Consent Agenda

Approval of minutes May 2023 Regular Meeting
Approval of Monthly Financial Reports
Motion to approve the consent agenda by Kempin, seconded by Dietrich. Motion passes unanimously.

Oath of Office

New members John Bielak and Tara Sweitzer were duly sworn and Engineer Bielak received his badge.
Recognition of Liam Reily and Beth Shaner for exceptional service.

EMS & Fire Chief Report

Chief Weisbaum presented his written report. In staffing, the paramedic/firefighter position is posted and Weisbaum hopes to receive 3-4 applications before June 30th. Assistant Chief Duke will return with the command vehicle next week and it should be in service next month. There is no determined date for the delivery of either the new ambulance or Engine 3. The apparatus committee will be traveling to look at vehicles in Minnesota and Rosenbauer will be bringing a vehicle to Crested Butte for committee review. Finally, the fall EMT class has interest with 8 applicants to date. Board member Kempin commends the CBFPD and CBSAR for the successful rescue at Judd Falls.

Public Comments

There were no public comments

Old Business

In Station 1 updates, CEO Caffrey states that both the County Land Use Meeting and Energy Mineral Impact Grant request were successful. There has also been forward momentum with the Town of Crested Butte with conditional approval of a sewer connection. The Crested Butte Town Council has provided a list of requests for sewer connection and CEO Caffrey is believes it is ok to accept these conditions however, all the requests have a cost associated with them and staff recommends the board to request a 1.0 sewer tap as opposed to the 1.5 sewer fee. Board member Kempin has a concern about going back to the negotiating table due to time constraints that an additional request may create. Board Member Dietrich agrees with Caffrey and would like to ask for the reduced tap fee, as well as, 1.0 on the user rate for sewer service fees for both lots. After further discussion the board was comfortable asking for reduced fees, however, a denial of reduced fees by the Town would not be a reason to halt progress on the project. Motion to accept the sewer terms and conditions with request for 1.0 tap fees and 1.0 ongoing service fees for both lots by McCann, seconded by Dietrich. Motion passes unanimously.

Moving on to the Town of Crested Butte municipal water offer, CEO Caffrey states that he did not find the water offer acceptable. Tunkey and Kempin agree with Caffrey as long as there is a guarantee of water in the "long run". In response, Caffrey states that with lot location, soils report and augmentation rights, independent water should not be a problem. Additionally, Caffrey suggests a request to lay dry pipe that could connect to municipal water in the future would be wise. Kempin asks about the practical implications and engineering for a water well, Dietrich gave some guidance on the process. Finally, Kempin asks about the expense compared to hooking into the Town of CB municipal water. Caffery responds that initially there might be a larger up front cost for the well, augmentation certificate and on-site storage, however it would be comparable to the tap fee and substantially cheaper over time. Lodovico asks if there is room for water storage tanks and Caffrey responds in the affirmative. Motion to reject the Town of Crested Butte offer of water with the exception of a dry pipe request by McCann, Seconded by Lodovico. Motion passes unanimously.

Caffrey presents Goulding Developments updates stating that based on the schedule FCI will provide an "initial guaranteed maximum price (iGMP)" in the fall with a "final guaranteed maximum price (fGMP)" later due to the need to secure subcontractors and ordering big ticket items like structural steel prior to construction start. The plan is to break ground as soon as possible in spring 2024. Preliminary civil conversations have been taking place Caffrey thanks Ems for providing valuable insight. Finally, cash flow is on track with investment income doing so well that the District will likely have to hold back some interest income to pay an arbitrage rebate to the IRS. Our investment managers have specialists available to deal with Arbitrage rebate issues.
In employee housing updates, Caffrey reports the District and County are close to reaching an agreement on the Larkspur lots. The County wanted to keep their current deed restrictions so the attorneys are drafting an independent development agreement and deed restriction agreement. CEO Caffrey requests Kempin run Section 7 of the deed restrictions by secondary mortgage market lenders. Once the agreement is finalized, CEO Caffrey suggests building on the duplex lot and offering those units for sale to qualified members and then using that income to subsequently build rental units on the triplex lot. There was board discussion about the language that would need to be developed for the employee-owned units. Kempin asked if the Larkspur HOA has changed the covenants to allow for the rental units. Caffrey responds that those covenants have not been changed yet but he will explore this once the contracts with the County are complete.
Finally, Caffrey mentions that the District has their name in for the Lazy K lottery on July 20th which has two units available. Board member Dietrich states that he is not a big fan of the Lazy K units. CEO Caffrey suggests that the Lazy K units would be a bridge for our employees until CBFPD builds their own units in district.

New Business

CEO Caffrey provided his written report in the packet.
Fire Marshal Ems presented his written report and thanked his team for their work. To date the Fire Prevention Department has received 32 residential project plan reviews and 10 new development reviews. Additionally, the Town of Crested Butte restaurants are approved for opening with minor corrections in advance of the busy summer season. Board Chairman McCann suggests utilizing 3rd party review for the larger projects.

Unscheduled Business

The CBFPD Board Strategic Planning Retreat is scheduled for November 9-11.
Kempin asks if there was any follow up on the 2023 election challenge. Caffery responds that there were no challenges filed and the District's attorney was not concerned about the returns changing the election results. CEO Caffrey states that he did follow up with the Town of Mt. Crested Butte Town Manager regarding the election results.
Finally, although there is no money allocated for public art at the new HQ there has been interest in preserving the ranching history and cattle loader that are on the former Spann Property. The board discussed commissioning a local artist to commemorate the cattle loader and perhaps have a history of ranching in the upper Gunnison Valley at the new fire station. A call for artists will likely take place soon with the hopes of preserving the cattle loader and vacant land in a painting or some other medium.

Motion to adjourn at 6:45 pm by McCann, seconded by Lodovico. Motion passes unanimously.

Crested Butte Fire Protection District

BUDGET VS. ACTUALS: CBFPD 2023 APPROVED - FY23 P&L

January - December 2023

	Total			
	Actual	Budget	over Budget	% of Budget
INCOME				
4000 Property Tax - General Fund	2,672,543.02	3,364,776.00	-692,232.98	79.43 %
4020 Specific Ownership Tax	75,149.05	130,000.00	-54,850.95	57.81 %
4040 Intergovernmental Revenue		25,000.00	-25,000.00	
4100 Ambulance/ EMS Service Fees	177,176.80	300,000.00	-122,823.20	59.06 %
4200 Plan Review Fees	258,096.50	125,000.00	133,096.50	206.48 %
4240 Rental Income	49,626.00	69,500.00	-19,874.00	71.40 %
4300 Impact Fees	14,981.94	25,000.00	-10,018.06	59.93 %
4400 Interest Income	50,753.57	25,000.00	25,753.57	203.01 %
4500 Grant Proceeds		150,000.00	-150,000.00	
4600 Contributions / Donations	1,000.00		1,000.00	
4710 Sale of Assets	6,300.00	2,000.00	4,300.00	315.00 %
4720 Vendor Refunds	13,560.00		13,560.00	
Unapplied Cash Payment Income	-3,104.00		-3,104.00	
Total Income	**3,316,082.88**	**4,216,276.00**	**-900,193.12**	**78.65 %**
GROSS PROFIT	**3,316,082.88**	**4,216,276.00**	**-900,193.12**	**78.65 %**
EXPENSES				
5010 (A) Wages - Administration	81,375.53	176,000.00	-94,624.47	46.24 %
5020 (A) Wages - Fire Prevention	137,684.70	303,208.00	-165,523.30	45.41 %
5030 (A) Part-Time / Temp Salaries		4,800.00	-4,800.00	
5060 (A) Payroll Processing Fees	3,477.80	6,000.00	-2,522.20	57.96 %
5130 (A) Medicare Tax	2,681.92	7,018.00	-4,336.08	38.21 %
5140 (A) Social Security Tax	2,634.72	6,112.00	-3,477.28	43.11 %
5150 (A) FPPA Pension - ER	17,188.14	41,338.00	-24,149.86	41.58 %
5160 (A) FAMLI Premium - ER	878.00	2,178.00	-1,300.00	40.31 %
5200 (A) Health Benefits	44,773.52	95,193.00	-50,419.48	47.03 %
5210 (A) EAP Program Fees	501.50	3,500.00	-2,998.50	14.33 %
5260 (A) Workers Compensation	40,664.00	45,000.00	-4,336.00	90.36 %

	Total			
	Actual	Budget	over Budget	% of Budget
Insurance				
5270 (A) Ski Pass Benefit		6,000.00	-6,000.00	
5290 (A) Health Reimbursement	58,145.86	92,700.00	-34,554.14	62.72 %
5300 (A) Advertising	1,926.06	5,000.00	-3,073.94	38.52 %
5320 (A) Accounting and Audit Fees	4,125.45	8,000.00	-3,874.55	51.57 %
5330 (E) Ambulance Billing Fees	6,009.98	18,000.00	-11,990.02	33.39 %
5340 (A) Bank Charges	634.44	2,500.00	-1,865.56	25.38 %
5341 QB Credit Card/ACH Fees	1,585.59		1,585.59	
Total 5340 (A) Bank Charges	**2,220.03**	**2,500.00**	**-279.97**	**88.80 %**
5360 (A) Board Expenses	471.64	11,000.00	-10,528.36	4.29 %
5365 (A) Board Stipends	3,400.00	7,000.00	-3,600.00	48.57 %
5370 (A) Debt Service - Lease Purchase	7,125.53	13,979.00	-6,853.47	50.97 %
5380 (A) Down Payment Assistance		1,500.00	-1,500.00	
5400 (A) Dues & Subscriptions	3,737.90	8,000.00	-4,262.10	46.72 %
5420 (A) Education & Training	3,062.08	18,000.00	-14,937.92	17.01 %
5440 (A) Elections	19,153.26	25,000.00	-5,846.74	76.61 %
5460 (A) Fire Prevention & Life Safety	4,489.15	15,000.00	-10,510.85	29.93 %
5500 (A) Insurance - General	35,174.00	35,000.00	174.00	100.50 %
5520 (A) IT Services & Subscriptions	23,104.50	40,000.00	-16,895.50	57.76 %
5540 (A) Legal & Professional	11,047.44	45,000.00	-33,952.56	24.55 %
5550 (A) Meals & Incentives	5,822.72	23,500.00	-17,677.28	24.78 %
5600 (A) Office Supplies & Equipment	6,344.71	18,000.00	-11,655.29	35.25 %
5620 (A) Postage & Shipping	589.07	3,000.00	-2,410.93	19.64 %
5640 (A) Rent	11,755.12	39,000.00	-27,244.88	30.14 %
5640.1 410 Cascadilla Unit A	16,800.00		16,800.00	
Total 5640 (A) Rent	**28,555.12**	**39,000.00**	**-10,444.88**	**73.22 %**
5660 (A) Repairs - Buildings	11,348.14	40,000.00	-28,651.86	28.37 %
5670 (A) - Repairs - Rental Units	2,018.06	5,000.00	-2,981.94	40.36 %
5700 (A) Snow Removal	12,432.51	10,000.00	2,432.51	124.33 %
5720 (A) Telecom - Fixed	8,868.80	9,000.00	-131.20	98.54 %
5760 (A) Travel	8,294.40	20,000.00	-11,705.60	41.47 %
5780 (A) Treasurer’s Fee - GF	80,132.98	102,001.00	-21,868.02	78.56 %
5810 (A) Utilities - Rental Units	2,966.38	3,000.00	-33.62	98.88 %

	Total			
	Actual	Budget	over Budget	% of Budget
5820 (A) Utilities	25,599.33	45,000.00	-19,400.67	56.89 %
5850 (A) Volunteer Pension Contribution	75,000.00	75,000.00	0.00	100.00 %
5900 (A) Miscellaneous-1		2,000.00	-2,000.00	
6010 (O) Wages - Ops FT	691,970.45	1,487,218.00	-795,247.55	46.53 %
6020 (O) Wages - Ops PT	65,511.92	165,000.00	-99,488.08	39.70 %
6060 (O) Unscheduled Overtime	31,123.10	79,011.00	-47,887.90	39.39 %
6070 (O) Training Pay	100.00	7,500.00	-7,400.00	1.33 %
6080 (O) Special Event Pay		1,500.00	-1,500.00	
6090 (O) Volunteer Stipends	11,500.00	50,000.00	-38,500.00	23.00 %
6130 (O) Medicare Tax	10,409.41	25,828.00	-15,418.59	40.30 %
6140 (O) Social Security Tax	5,096.78	13,330.00	-8,233.22	38.24 %
6150 (O) FPPA Pension - ER	78,018.18	178,411.00	-100,392.82	43.73 %
6160 (O) FAMLI Premium - ER	3,144.65	8,016.00	-4,871.35	39.23 %
6200 (O) Health Benefits	126,371.80	290,707.00	-164,335.20	43.47 %
6270 (O) Ski Pass Benefit		45,000.00	-45,000.00	
6360 (O) Dispatch Fees	49,219.11	51,000.00	-1,780.89	96.51 %
6420 (O) Education & Training	29,350.93	50,000.00	-20,649.07	58.70 %
6440 (E) EMS Supplies	14,890.82	35,000.00	-20,109.18	42.55 %
6450 (F) Firefighting Supplies	10,594.32	15,000.00	-4,405.68	70.63 %
6460 (O) Fuel	17,640.31	45,000.00	-27,359.69	39.20 %
6480 (O) Hazardous Waste Disposal		1,600.00	-1,600.00	
6550 (O) Meals - Training	7,972.11	16,800.00	-8,827.89	47.45 %
6580 (E) Medical Direction	5,057.20	10,000.00	-4,942.80	50.57 %
6600 (O) Protective Equipment	14,741.56	30,000.00	-15,258.44	49.14 %
6620 (O) Radio & Computer Equipment	4,928.94	20,000.00	-15,071.06	24.64 %
6640 (O) Repairs - Equipment	2,124.24	6,000.00	-3,875.76	35.40 %
6660 (O) Repairs - Vehicles	9,374.94	40,000.00	-30,625.06	23.44 %
6670 (O) Responder Incentives	2,577.58	10,000.00	-7,422.42	25.78 %
6675 (O) Station Supplies	4,428.29	7,500.00	-3,071.71	59.04 %
6680 (E) Service Contracts	19,776.22	12,700.00	7,076.22	155.72 %
6720 (O) Telecom - Mobile	5,932.14	14,000.00	-8,067.86	42.37 %
6730 (O) Tools & Hardware	543.31	2,000.00	-1,456.69	27.17 %
6750 (O) Training Equipment &	7,996.74	8,000.00	-3.26	99.96 %

	Total			
	Actual	Budget	over Budget	% of Budget
Supplies				
6760 (O) Travel	12,299.97	20,000.00	-7,700.03	61.50 %
6800 (O) Uniforms	26,710.46	22,500.00	4,210.46	118.71 %
6820 (O) Wellness & Physicals	1,944.80	10,000.00	-8,055.20	19.45 %
6900 (O) Miscellaneous		2,000.00	-2,000.00	
Total Expenses	**2,054,375.21**	**4,217,148.00**	**-2,162,772.79**	**48.71 %**
NET OPERATING INCOME	**1,261,707.67**	**-872.00**	**1,262,579.67**	**-144,691.25 %**
OTHER EXPENSES				
8010 Capital Expenditures		472,500.00	-472,500.00	
Total Other Expenses	**0.00**	**472,500.00**	**-472,500.00**	**0.00%**
NET OTHER INCOME	**0.00**	**-472,500.00**	**472,500.00**	**0.00 %**
NET INCOME	**$1,261,707.67**	**$ -473,372.00**	**$1,735,079.67**	**-266.54 %**

Crested Butte Fire Protection District

Balance Sheet

As of June 30, 2023

	TOTAL
ASSETS	
Current Assets	
Bank Accounts	
1000 Operating Checking	358,367.20
1010 BOTW Money Market	222,873.56
1100 COLORTRUST - General Fund	3,073,281.48
1120 COLORTRUST - Debt Proceeds	0.00
1130 CSIP Operating	504,910.51
1200 Triplex Lease Purchase	0.00
Total Bank Accounts	**$4,159,432.75**
Accounts Receivable	
1210 Accounts Receivable- Rent/Fees	31,675.37
1211 Mill Levy Property Tax Receivable	694,732.98
1250 Property Tax Receivable	0.00
2220 Prepaid Rent Revenue	0.00
Total Accounts Receivable	**$726,408.35**
Other Current Assets	
1000.3 Clearing Account	0.00
1150 Due from CBFPD Bond Fund	0.00
1255 Accounts Receivable - AUDIT	0.00
1260 Undeposited Funds	0.00
1300 Prepayments	57,321.41
Total Other Current Assets	**$57,321.41**
Total Current Assets	**$4,943,162.51**
Fixed Assets	
1500.1 306 Maroon Ave	**0.00**
1500.2 751 Gothic Road	**0.00**
1500.3 331 Teocalli Road	**0.00**
1500.4 104 Avion Dr	**0.00**
1500.5 819,821 & 823 Teocalli Ave.	0.00
1500.6 10 9th Street	0.00
1500.8 New Station 1 Campus	0.00
1510 Vehicles	**0.00**
1510.1 2019 Chevrolet Colorado D-1	0.00
1510.2 2019 Chevrolet Colorado D-2	0.00
1520 Capital Equipment	**135,876.07**
1520.1 Machinery & Equipment	0.00
1540 Computer & Office Equipment	425.88
Total Fixed Assets	**$136,301.95**

	TOTAL
Other Assets	
1600 Bond Fund Reimbursables	0.00
Total Other Assets	**$0.00**
TOTAL ASSETS	**$5,079,464.46**
LIABILITIES AND EQUITY	
Liabilities	
Current Liabilities	
Accounts Payable	
2000 Accounts Payable	0.00
Total Accounts Payable	**$0.00**
Credit Cards	
1050.1 CBFPD Mastercard	11,086.83
Total Credit Cards	**$11,086.83**
Other Current Liabilities	
2005 Accounts Payable- Audit	0.00
2140 Payroll Wages Payable	0.00
2150 Payroll Taxes Payable	0.00
2151 Federal Witholding Liability	0.00
2155 FICA / Medicare Payable	0.00
2160 State Witholdingl Liability	0.00
2170 FPPA Pension Payable	1,095.54
2180 Garnishment Payable	0.00
2225 Prepaid Rent	3,104.00
2300 Cash Due Vol Pension Fund	0.00
Total Other Current Liabilities	**$4,199.54**
Total Current Liabilities	**$15,286.37**
Long-Term Liabilities	
2210 Deferred Property Tax	694,732.98
2500 Rental Unit Security Deposits	2,600.00
2500.1 Triplex Lease - Purchase	-23,687.45
Total Long-Term Liabilities	**$673,645.53**
Total Liabilities	**$688,931.90**
Equity	
3000 Opening Balance Equity	0.00
3050 TABOR Reserve	124,000.00
3100 Operating Reserve	1,421,189.00
3150 Restricted for Spann Note Payable	0.00
3200 Major Incident Reserve	100,000.00
3250 Down Payment Assistance Fund	80,000.00
3300 Impact Fee {Capital) Reserve	389,815.38
3310 Mt. CB Impact Fee Reserve	0.00
3320 CB Impact Fee Reserve	0.00
3330 County Impact Fee Reserve	0.00
3350 Committed Subs Years Budget	521,021.00
3400 Unrestricted Reserve	445,774.19

	TOTAL
Net Income	1,308,732.99
Total Equity	**$4,390,532.56**
TOTAL LIABILITIES AND EQUITY	**$5,079,464.46**

Crested Butte Fire Protection District

Expenses by Vendor Summary

June 2023

	TOTAL
5.11	601.70
5b's Bbq	1,994.55
ADP	739.60
ADP Screening & Selection Services	52.48
AeroCare, USA	60.00
Alerus	1,866.47
Alpengardener	65.94
Alpine Lumber Co.	384.88
Amazon	607.33
Amazon Web Services	7.05
Ambulance Medical Billing	3,334.48
Apple	0.99
AT&T	526.20
ATMOS Energy	621.57
Bank of the West	50.25
Blackjack Garage Door	1,100.00
Blue Host	89.88
Blue Sky	139.95
Bound Tree Medical	714.94
Break Time	13.38
Buckhorn Ranch Assoc.	450.00
Camp 4 Coffee	173.75
Carrot-Top Industries	455.87
CEBT	25,248.90
CenturyLink	208.42
Chris McCann	100.00
Clark's Market	132.62
CoDFPC - Colorado Division of Fire Prevention and Control	230.00
Colorado ALS	7.00
Colorado Firecamp	1,800.00
Colorado Firefighter Heart & Cancer Benefits Trust	12,376.00
Concur Solutions (christopherson Business Travel)	1,220.48
Crested Butte Ace Hardware	867.43
Crested Butte South Metro District	314.63
Dell	916.73
Deuce Wynes	2,819.40
Embroidered Sportswear Company	80.00
ESO	1,321.20
Exxon Mobil	2,556.65
FedEx	115.32
Fire Penny	83.90
Fire Rescue International	1,398.00
Fuel Generic	9.37
Galls	492.99

	TOTAL
Gas Cafe	23.81
Gobin's, Inc.	230.03
GoDaddy	54.65
Gunnison Construction & Septic	140.00
Gunnison County Clerk and Recorder	24.28
Gunnison County Electric Association	605.64
Guru Importer	10.00
Hickory Hut	13.10
Holiday Inn Express	523.06
HVM Security	360.00
Imperator Solutions	2,500.00
International Association of Arson Investigators	408.00
International Code Council, Inc	230.00
Jack Dietrich	100.00
Jayson Simons Jones	2,400.00
Jeff Duke	100.02
Jeff Isaac	100.00
Jeff Sacra	4,700.00
JS Designs	98.00
Kansas Turnpike Authority	7.00
Ken Lodovico	100.00
Kristina F Kempin	100.00
L.N. Curtis & Sons	9,293.93
Life Assist	2,682.18
Lodging (Generic)	-9.29
Lyons Gaddis	2,065.00
Montrose Fire Protection District	2,000.00
Montrose Water Factory	150.52
Monty's Auto Parts	895.69
Mountain Spirit Liquor	383.39
Mountain Surfaces, Inc.	375.00
Mt. Crested Butte Water& Sanitation	115.49
Office Supplies Generic	210.04
Oreily Auto Parts	51.45
Paper Clip	230.46
Paradox	229.74
Pine Grill	56.28
Quality Health Network	285.00
QuickBooks Payments	499.63
Respond First Aid Systems	97.10
Restaurant (Generic)	631.10
Robert Weisbaum	270.00
Rumors	132.48
Ryce Asian Bistro	654.72
SatCom Global	110.30
Shay Krier MD	475.00
SlingTV	55.00
Spectrum	237.54
Springhill Suites	166.00
The Bubble Wrap	20.00

	TOTAL
The Fire Store	105.08
Town of Crested Butte	1,819.37
Town of Mt. Crested Butte.	2,800.00
Tuck Communication Services, Inc.	7,678.00
UMR	1,538.00
USABlueBook	134.51
Verizon	299.74
Visionary Broadband	146.10
Vyaire Medical 203, Inc	1,648.66
W. Eric Tunkey	100.00
Waste Management	894.54
Wendy's	10.50
Western Slope Fire & Safety	3,015.50
Wufoo	349.00
Not Specified	194,262.97
TOTAL	**$316,343.61**

Crested Butte Fire Protection District

Transaction Report

June 2023

DATE	TRANSACTION TYPE	NUM	NAME	MEMO/DESCRIPTION	ACCOUNT	SPLIT	AMOUNT	BALANCE
06/05/2023	Journal Entry	0505		CO FAMLI - ER	6160 (O) FAMLI Premium - ER	-Split-	270.29	270.29
06/05/2023	Journal Entry	0505		ER PENSION CONT	6150 (O) FPPA Pension - ER	-Split-	5,262.92	5,533.21
06/05/2023	Journal Entry	0504		Regular Earnings	6090 (O) Volunteer Stipends	-Split-	2,200.00	7,733.21
06/05/2023	Journal Entry	0504		CO FAMLI - ER	6160 (O) FAMLI Premium - ER	-Split-	9.91	7,743.12
06/05/2023	Journal Entry	0504		ADP - ER CO FAMLI	6140 (O) Social Security Tax	-Split-	136.40	7,879.52
06/05/2023	Journal Entry	0504		ADP - ER CO FAMLI	6130 (O) Medicare Tax	-Split-	31.90	7,911.42
06/05/2023	Journal Entry	0505		HOLIDAY	5010 (A) Wages - Administration	-Split-	201.92	8,113.34
06/05/2023	Journal Entry	0505		Regular Earnings	5010 (A) Wages - Administration	-Split-	5,759.60	13,872.94
06/05/2023	Journal Entry	0505		VACATION	5010 (A) Wages - Administration	-Split-	820.30	14,693.24
06/05/2023	Journal Entry	0505		Fire Prevention	5020 (A) Wages - Fire Prevention	-Split-	11,575.20	26,268.44
06/05/2023	Journal Entry	0505		Employer Medicare Tax	5130 (A) Medicare Tax	-Split-	237.21	26,505.65
06/05/2023	Journal Entry	0505		Employer Social Security Tax	5140 (A) Social Security Tax	-Split-	234.00	26,739.65
06/05/2023	Journal Entry	0505		ER AD&D CORRECT	5150 (A) FPPA Pension - ER	-Split-	247.91	26,987.56
06/05/2023	Journal Entry	0505		ER PENSION CONT	5150 (A) FPPA Pension - ER	-Split-	1,336.18	28,323.74
06/05/2023	Journal Entry	0505		CO FAMLI - ER	5160 (A) FAMLI Premium - ER	-Split-	73.62	28,397.36
06/05/2023	Journal Entry	0505		Voluntary Life Contribution	5200 (A) Health Benefits	-Split-	-60.57	28,336.79
06/05/2023	Journal Entry	0505		HOLIDAY	6010 (O) Wages - Ops FT	-Split-	3,178.74	31,515.53
06/05/2023	Journal Entry	0505		ER AD&D CORRECT	6150 (O) FPPA Pension - ER	-Split-	941.79	32,457.32
06/05/2023	Journal Entry	0505		Employer Social Security Tax	6140 (O) Social Security Tax	-Split-	760.05	33,217.37
06/05/2023	Journal Entry	0505		Employer Medicare Tax	6130 (O) Medicare Tax	-Split-	870.99	34,088.36
06/05/2023	Journal Entry	0505		OVERTIME UNSCH	6060 (O) Unscheduled Overtime	-Split-	2,070.00	36,158.36
06/05/2023	Journal Entry	0505		Regular Earnings	6020 (O) Wages - Ops PT	-Split-	10,004.92	46,163.28
06/05/2023	Journal Entry	0505		HOLIDAY	6020 (O) Wages - Ops PT	-Split-	184.00	46,347.28
06/05/2023	Journal Entry	0505		VACATION	6010 (O) Wages - Ops FT	-Split-	350.04	46,697.32
06/05/2023	Journal Entry	0505		SICK	6010 (O) Wages - Ops FT	-Split-	2,013.96	48,711.28
06/05/2023	Journal Entry	0505		Regular Earnings	6010 (O) Wages - Ops FT	-Split-	46,242.99	94,954.27
06/05/2023	Journal Entry	0505		Overtime Earnings	6010 (O) Wages - Ops FT	-Split-	3,613.47	98,567.74
06/07/2023	Journal Entry	0506			5140 (A) Social Security Tax	-Split-	0.00	98,567.74
06/07/2023	Journal Entry	0506			5130 (A) Medicare Tax	-Split-	0.00	98,567.74
06/07/2023	Journal Entry	0506			5050 (A) Overtime	-Split-	0.00	98,567.74
06/07/2023	Journal Entry	0506			5030 (A) Part-Time / Temp Salaries	-Split-	0.00	98,567.74
06/07/2023	Journal Entry	0506			5010 (A) Wages - Administration	-Split-	0.00	98,567.74
06/07/2023	Journal Entry	0506			6150 (O) FPPA Pension - ER	-Split-	0.00	98,567.74
06/07/2023	Journal Entry	0506			6140 (O) Social Security Tax	-Split-	0.00	98,567.74
06/07/2023	Journal Entry	0506			6130 (O) Medicare Tax	-Split-	0.00	98,567.74
06/07/2023	Journal Entry	0506			6080 (O) Special Event Pay	-Split-	0.00	98,567.74
06/07/2023	Journal Entry	0506			6070 (O) Training Pay	-Split-	0.00	98,567.74
06/07/2023	Journal Entry	0506			6060 (O) Unscheduled Overtime	-Split-	0.00	98,567.74
06/07/2023	Journal Entry	0506			6030 (O) On-Call Pay	-Split-	0.00	98,567.74
06/07/2023	Journal Entry	0506			6020 (O) Wages - Ops PT	-Split-	0.00	98,567.74
06/07/2023	Journal Entry	0506			6010 (O) Wages - Ops FT	-Split-	0.00	98,567.74
06/07/2023	Journal Entry	0506			5150 (A) FPPA Pension - ER	-Split-	0.00	98,567.74
06/10/2023	Journal Entry	0507			5780 (A) Treasurer's Fee - GF	-Split-	7,569.57	106,137.31
06/14/2023	Check	36778	Mike Reily	Kansas City Fire Rescue International	6760 (O) Travel	1000 Operating Checking	634.40	106,771.71
06/19/2023	Deposit			Western Regional EMS Council	6620 (O) Radio & Computer Equipment	1010 BOTW Money Market	-7,500.00	99,271.71
06/20/2023	Journal Entry	0508		Regular Earnings	5010 (A) Wages - Administration	-Split-	5,885.80	105,157.51
06/20/2023	Journal Entry	0508		CO FAMLI - ER	6160 (O) FAMLI Premium - ER	-Split-	272.46	105,429.97
06/20/2023	Journal Entry	0508		ER PENSION CONT	6150 (O) FPPA Pension - ER	-Split-	5,163.54	110,593.51
06/20/2023	Journal Entry	0508		ER AD&D CORRECT	6150 (O) FPPA Pension - ER	-Split-	924.02	111,517.53
06/20/2023	Journal Entry	0508		Employer Social Security Tax	6140 (O) Social Security Tax	-Split-	687.39	112,204.92
06/20/2023	Journal Entry	0508		Employer Medicare Tax	6130 (O) Medicare Tax	-Split-	877.97	113,082.89
06/20/2023	Journal Entry	0508		OVERTIME UNSCH	6060 (O) Unscheduled Overtime	-Split-	3,453.33	116,536.22

DATE	TRANSACTION TYPE	NUM	NAME	MEMO/DESCRIPTION	ACCOUNT	SPLIT	AMOUNT	BALANCE
06/20/2023	Journal Entry	0508		Regular Earnings	6020 (O) Wages - Ops PT	-Split-	10,190.00	126,726.22
06/20/2023	Journal Entry	0508		VACATION	6010 (O) Wages - Ops FT	-Split-	5,338.32	132,064.54
06/20/2023	Journal Entry	0508		SICK	6010 (O) Wages - Ops FT	-Split-	801.55	132,866.09
06/20/2023	Journal Entry	0508		Regular Earnings	6010 (O) Wages - Ops FT	-Split-	44,664.15	177,530.24
06/20/2023	Journal Entry	0508		Overtime Earnings	6010 (O) Wages - Ops FT	-Split-	3,549.00	181,079.24
06/20/2023	Journal Entry	0508		Voluntary Life Contribution	5200 (A) Health Benefits	-Split-	-60.57	181,018.67
06/20/2023	Journal Entry	0508		CO FAMLI - ER	5160 (A) FAMLI Premium - ER	-Split-	72.86	181,091.53
06/20/2023	Journal Entry	0508		ER PENSION CONT	5150 (A) FPPA Pension - ER	-Split-	1,319.93	182,411.46
06/20/2023	Journal Entry	0508		ER AD&D CORRECT	5150 (A) FPPA Pension - ER	-Split-	247.91	182,659.37
06/20/2023	Journal Entry	0508		Employer Social Security Tax	5140 (A) Social Security Tax	-Split-	223.40	182,882.77
06/20/2023	Journal Entry	0508		Employer Medicare Tax	5130 (A) Medicare Tax	-Split-	234.73	183,117.50
06/20/2023	Journal Entry	0508		Fire Prevention	5020 (A) Wages - Fire Prevention	-Split-	11,416.80	194,534.30
06/20/2023	Journal Entry	0508		SICK	5010 (A) Wages - Administration	-Split-	883.40	195,417.70
06/21/2023	Journal Entry	0509			5010 (A) Wages - Administration	-Split-	0.00	195,417.70
06/21/2023	Journal Entry	0509			5050 (A) Overtime	-Split-	0.00	195,417.70
06/21/2023	Journal Entry	0509			6150 (O) FPPA Pension - ER	-Split-	0.00	195,417.70
06/21/2023	Journal Entry	0509			6140 (O) Social Security Tax	-Split-	0.00	195,417.70
06/21/2023	Journal Entry	0509			6130 (O) Medicare Tax	-Split-	0.00	195,417.70
06/21/2023	Journal Entry	0509			6080 (O) Special Event Pay	-Split-	0.00	195,417.70
06/21/2023	Journal Entry	0509			6070 (O) Training Pay	-Split-	0.00	195,417.70
06/21/2023	Journal Entry	0509			6060 (O) Unscheduled Overtime	-Split-	0.00	195,417.70
06/21/2023	Journal Entry	0509			6030 (O) On-Call Pay	-Split-	0.00	195,417.70
06/21/2023	Journal Entry	0509			6020 (O) Wages - Ops PT	-Split-	0.00	195,417.70
06/21/2023	Journal Entry	0509			6010 (O) Wages - Ops FT	-Split-	0.00	195,417.70
06/21/2023	Journal Entry	0509			5150 (A) FPPA Pension - ER	-Split-	0.00	195,417.70
06/21/2023	Journal Entry	0509			5140 (A) Social Security Tax	-Split-	0.00	195,417.70
06/21/2023	Journal Entry	0509			5130 (A) Medicare Tax	-Split-	0.00	195,417.70
06/21/2023	Journal Entry	0509			5030 (A) Part-Time / Temp Salaries	-Split-	0.00	195,417.70
06/22/2023	Expense			Preauthorized ACH Debit InstaMed Fee Acc INSTAMED 0622	5340 (A) Bank Charges	1010 BOTW Money Market	0.01	195,417.71
06/24/2023	Check	36788	Jordan Iraola	Food Purchase 6/22 training	6550 (O) Meals - Training	1000 Operating Checking	60.25	195,477.96
06/26/2023	Deposit			refund from RMBL for epi-pen purchase	6440 (E) EMS Supplies	1010 BOTW Money Market	-1,215.00	194,262.96
06/28/2023	Expense			Preauthorized ACH Debit InstaMed Fee Acc INSTAMED 0628	5340 (A) Bank Charges	1010 BOTW Money Market	0.01	194,262.97
TOTAL							**$194,262.97**	

Crested Butte Fire Protection District Capital Funds Project

Profit and Loss

January - June, 2023

	TOTAL
Income	
4010 Property Tax - Capital Fund	1,332,478.57
4020 Specific Ownership Tax	38,143.34
4100.2 Interest Income (Capital)	333,896.15
4100.3 Interest Income (Bond)	2,329.15
Total Income	**$1,706,847.21**
GROSS PROFIT	**$1,706,847.21**
Expenses	
5300 Land	349,266.33
5400 Soft Costs	277,710.88
5780 Treasure's Fee - CF	39,988.72
5790.2 Bank Charges (Capital)	185.00
5790.3 Bank Charges (Bond)	35.00
5795 Bond Interest	527,350.00
Total Expenses	**$1,194,535.93**
NET OPERATING INCOME	**$512,311.28**
NET INCOME	**$512,311.28**

Crested Butte Fire Protection District Capital Funds Project

Balance Sheet

As of June 30, 2023

	TOTAL
ASSETS	
Current Assets	
Bank Accounts	
1000 Checking	239,403.38
1010 Money Market	506,225.51
1050 CSIP Investment Account - Bond Payment	476,857.11
1051 Colotrust Account- Multi-Year Land Purchase	1,868,731.36
1100 CSIP Investment Account - Proceeds	26,946,655.01
Total Bank Accounts	**$30,037,872.37**
Accounts Receivable	
1211 Mill Levy Property Tax Receivable	848,389.45
Total Accounts Receivable	**$848,389.45**
Other Current Assets	
1260 Capital Accrued Interest- CSIP	42,438.52
1520 Bond Cash with County Treasurer	0.00
2010 Due to CBFPD Operating Account	0.00
Total Other Current Assets	**$42,438.52**
Total Current Assets	**$30,928,700.34**
TOTAL ASSETS	**$30,928,700.34**
LIABILITIES AND EQUITY	
Liabilities	
Long-Term Liabilities	
2210 Deferred Property Tax	848,389.45
Total Long-Term Liabilities	**$848,389.45**
Total Liabilities	**$848,389.45**
Equity	
3100 Restricted for Debt Service	-2,605,747.00
3150 Restricted Spann Note Payable	2,605,747.00
Retained Earnings	29,567,999.61
Net Income	512,311.28
Total Equity	**$30,080,310.89**
TOTAL LIABILITIES AND EQUITY	**$30,928,700.34**

Crested Butte Fire Protection District Capital Funds Project

Expenses by Vendor Summary

January - June, 2023

	TOTAL
Bio-Environs	1,080.00
Blythe Group + co	186,024.67
BOK Financial	527,350.00
Cesare, Inc.	2,057.88
Goulding Development Advisors	13,259.06
Gunnison County	4,165.00
Lyons Gaddis	7,249.27
Maureillo Planning Group, LLC	51,495.00
McDowell Engineering, LLC	6,780.00
Panterra Energy, LLC	5,600.00
Virgil & Lee Spann Ranches, Inc	349,266.33
Not Specified	40,208.72
TOTAL	**$1,194,535.93**

Crested Butte Fire Protection District Capital Funds Project

Transaction Report

January - June, 2023

DATE	TRANSACTION TYPE	NUM	NAME	MEMO/DESCRIPTION	ACCOUNT	SPLIT	AMOUNT	BALANCE
01/03/2023	Deposit		Bank of the West	Miscellaneous Fee Refund VALUED CUSTOMER MONTHLY SERVICE	5790.2 Bank Charges (Capital)	1000 Checking	-25.00	-25.00
01/03/2023	Expense		Bank of the West	Wire Fee Spann Payment Miscellaneous Fees OUTGOING DOMESTIC WIRE/REF # 230	5790.2 Bank Charges (Capital)	1000 Checking	35.00	10.00
01/03/2023	Expense		Bank of the West	Miscellaneous Fees PREVIOUS PERIOD ACTIVITY RESULTE	5790.2 Bank Charges (Capital)	1000 Checking	25.00	35.00
01/20/2023	Expense		Bank of the West	Miscellaneous Fees NON ANALYZED CHARGES/MISCELLANE	5790.2 Bank Charges (Capital)	1000 Checking	25.00	60.00
02/01/2023	Deposit		Bank of the West	Miscellaneous Fee Refund VALUED CUSTOMER MONTHLY SERVICE	5790.2 Bank Charges (Capital)	1000 Checking	-25.00	35.00
02/01/2023	Expense		Bank of the West	Miscellaneous Fees PREVIOUS PERIOD ACTIVITY RESULTE	5790.2 Bank Charges (Capital)	1000 Checking	25.00	60.00
02/10/2023	Journal Entry	28			5780 Treasure’s Fee - CF	-Split-	4,760.60	4,820.60
02/21/2023	Expense		Bank of the West	Miscellaneous Fees NON ANALYZED CHARGES/MISCELLANE	5790.2 Bank Charges (Capital)	1000 Checking	25.00	4,845.60
03/01/2023	Deposit		Bank of the West	Miscellaneous Fee Refund VALUED CUSTOMER MONTHLY SERVICE	5790.2 Bank Charges (Capital)	1000 Checking	-25.00	4,820.60
03/01/2023	Expense		Bank of the West	Miscellaneous Fees PREVIOUS PERIOD ACTIVITY RESULTE	5790.2 Bank Charges (Capital)	1000 Checking	25.00	4,845.60
03/14/2023	Journal Entry	30			5780 Treasure’s Fee - CF	-Split-	14,833.89	19,679.49
03/20/2023	Expense		Bank of the West	Miscellaneous Fees NON ANALYZED CHARGES/MISCELLANE	5790.2 Bank Charges (Capital)	1000 Checking	25.00	19,704.49
04/03/2023	Expense		Bank of the West	Miscellaneous Fees PREVIOUS PERIOD ACTIVITY RESULTE	5790.2 Bank Charges (Capital)	1000 Checking	25.00	19,729.49
04/03/2023	Deposit		Bank of the West	Miscellaneous Fee Refund VALUED CUSTOMER MONTHLY SERVICE	5790.2 Bank Charges (Capital)	1000 Checking	-25.00	19,704.49
04/10/2023	Journal Entry	48			5780 Treasure’s Fee - CF	-Split-	5,351.80	25,056.29
04/20/2023	Expense		Bank of the West	Miscellaneous Fees NON ANALYZED CHARGES/MISCELLANE	5790.2 Bank Charges (Capital)	1000 Checking	25.00	25,081.29
05/01/2023	Deposit		Bank of the West	Miscellaneous Fee Refund VALUED CUSTOMER MONTHLY SERVICE	5790.2 Bank Charges (Capital)	1000 Checking	-25.00	25,056.29
05/01/2023	Expense		Bank of the West	Miscellaneous Fees PREVIOUS PERIOD ACTIVITY RESULTE	5790.2 Bank Charges (Capital)	1000 Checking	25.00	25,081.29
05/10/2023	Journal Entry	53			5780 Treasure’s Fee - CF	-Split-	11,263.86	36,345.15
05/11/2023	Expense		Bank of the West	Wire Fee	5790.3 Bank Charges (Bond)	1010 Money Market	35.00	36,380.15
05/22/2023	Expense		Bank of the West	Miscellaneous Fees NON ANALYZED CHARGES/MISCELLANE	5790.2 Bank Charges (Capital)	1000 Checking	25.00	36,405.15
06/02/2023	Expense		Bank of the West	Miscellaneous Fees PREVIOUS PERIOD ACTIVITY RESULTE	5790.2 Bank Charges (Capital)	1000 Checking	25.00	36,430.15
06/02/2023	Deposit		Bank of the West	Miscellaneous Fee Refund VALUED CUSTOMER MONTHLY SERVICE	5790.2 Bank Charges (Capital)	1000 Checking	-25.00	36,405.15
06/10/2023	Journal Entry	55			5780 Treasure’s Fee - CF	-Split-	3,778.57	40,183.72
06/20/2023	Expense		Bank of the West	Miscellaneous Fees NON ANALYZED CHARGES/MISCELLANE	5790.2 Bank Charges (Capital)	1000 Checking	25.00	40,208.72
TOTAL							**$40,208.72**	

Customer Service
PO Box 11813
Harrisburg, PA 17108-1813

ACCOUNT STATEMENT

Crested Butte Fire Protection District

For the Month Ending
June 30, 2023

Client Management Team

Chris Blackwood
Managing Director
950 17th Street, DN-CO-T8
Denver, CO 80202
720-955-2530
blackwoodc@pfmam.com

Contents

Accounts included in Statement

2210106001	Crested Butte Fire Protection District
2210106002	Operating Account Fund
2210106003	Bond Payment Fund

Important Messages

CSIP will be closed on 07/04/2023 for Independence Day.

CRESTED BUTTE FIRE PROTECTION DISTRICT
SEAN CAFFREY
P.O. BOX 1009
CRESTED BUTTE, CO 81224

Online Access www.csipinvest.com **Customer Service** 1-855-274-7468

Important Disclosures

Important Disclosures

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Proxy Voting PFMAM does not normally receive proxies to vote on behalf of its clients. However, it does on occasion receive consent requests. In the event a consent request is received the portfolio manager contacts the client and then proceeds according to their instructions. PFMAM's Proxy Voting Policy is available upon request by contacting Service Operations at the address below.

Questions About an Account PFMAM's monthly statement is intended to detail our investment advisory activity as well as the activity of any accounts held by clients in pools that are managed by PFMAM. The custodian bank maintains the control of assets and executes (i.e., settles) all investment transactions. The custodian statement is the official record of security and cash holdings and transactions. PFMAM recognizes that clients may use these reports to facilitate record keeping and that the custodian bank statement and the PFMAM statement should be reconciled and differences resolved. Many custodians use a settlement date basis which may result in the need to reconcile due to a timing difference.

Account Control PFMAM does not have the authority to withdraw funds from or deposit funds to the custodian outside the scope of services provided by PFMAM. Our clients retain responsibility for their internal accounting policies; implementing and enforcing internal controls and generating ledger entries or otherwise recording transactions.

Market Value Generally, PFMAM's market prices are derived from closing bid prices as of the last business day of the month as supplied by Refinitiv or Bloomberg. For certain short-term investments or where prices are not available from generally recognized sources the securities are priced using a yield-based matrix system to arrive at an estimated market value. Prices that fall between data points are interpolated. Non-negotiable FDIC-insured bank certificates of deposit are priced at par. Although PFMAM believes the prices to be reliable, the values of the securities may not represent the prices at which the securities could have been bought or sold. Explanation of the valuation methods for a registered investment company or local government investment program is contained in the appropriate fund offering documentation or information statement.

Amortized Cost The original cost of the principal of the security is adjusted for the amount of the periodic reduction of any discount or premium from the purchase date until the date of the report. Discount or premium with respect to short term securities (those with less than one year to maturity at time of issuance) is amortized on a straightline basis. Such discount or premium with respect to longer term securities is amortized using the constant yield basis.

Tax Reporting Cost data and realized gains / losses are provided for informational purposes only. Please review for accuracy and consult your tax advisor to determine the tax consequences of your security transactions. PFMAM does not report such information to the IRS or other taxing authorities and is not responsible for the accuracy of such information that may be required to be reported to federal, state or other taxing authorities.

Financial Situation In order to better serve you, PFMAM should be promptly notified of any material change in your investment objective or financial situation.

Callable Securities Securities subject to redemption prior to maturity may be redeemed in whole or in part before maturity, which could affect the yield represented.

Portfolio The securities in this portfolio, including shares of mutual funds, are not guaranteed or otherwise protected by PFMAM, the FDIC (except for certain non-negotiable certificates of deposit) or any government agency. Investment in securities involves risks, including the possible loss of the amount invested. Actual settlement values, accrued interest, and amortized cost amounts may vary for securities subject to an adjustable interest rate or subject to principal paydowns. Any changes to the values shown may be reflected within the next monthly statement's beginning values.

Rating Information provided for ratings is based upon a good faith inquiry of selected sources, but its accuracy and completeness cannot be guaranteed.

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Key Terms and Definitions

Dividends on local government investment program funds consist of interest earned, plus any discount ratably amortized to the date of maturity, plus all realized gains and losses on the sale of securities prior to maturity, less ratable amortization of any premium and all accrued expenses to the fund. Dividends are accrued daily and may be paid either monthly or quarterly. The monthly earnings on this statement represent the estimated dividend accrued for the month for any program that distributes earnings on a quarterly basis. There is no guarantee that the estimated amount will be paid on the actual distribution date.

Current Yield is the net change, exclusive of capital changes and income other than investment income, in the value of a hypothetical fund account with a balance of one share over the seven-day base period including the statement date, expressed as a percentage of the value of one share (normally $1.00 per share) at the beginning of the seven-day period. This resulting net change in account value is then annualized by multiplying it by 365 and dividing the result by 7. The yields quoted should not be considered a representation of the yield of the fund in the future, since the yield is not fixed.

Average maturity represents the average maturity of all securities and investments of a portfolio, determined by multiplying the par or principal value of each security or investment by its maturity (days or years), summing the products, and dividing the sum by the total principal value of the portfolio. The stated maturity date of mortgage backed or callable securities are used in this statement. However the actual maturity of these securities could vary depending on the level or prepayments on the underlying mortgages or whether a callable security has or is still able to be called.

Monthly distribution yield represents the net change in the value of one share (normally $1.00 per share) resulting from all dividends declared during the month by a fund expressed as a percentage of the value of one share at the beginning of the month. This resulting net change is then annualized by multiplying it by 365 and dividing it by the number of calendar days in the month.

YTM at Cost The yield to maturity at cost is the expected rate of return, based on the original cost, the annual interest receipts, maturity value and the time period from purchase date to maturity, stated as a percentage, on an annualized basis.

YTM at Market The yield to maturity at market is the rate of return, based on the current market value, the annual interest receipts, maturity value and the time period remaining until maturity, stated as a percentage, on an annualized basis.

Managed Account A portfolio of investments managed discretely by PFMAM according to the client's specific investment policy and requirements. The investments are directly owned by the client and held by the client's custodian.

Unsettled Trade A trade which has been executed however the final consummation of the security transaction and payment has not yet taken place.

Please review the detail pages of this statement carefully. If you think your statement is wrong, missing account information, or if you need more information about a transaction, please contact PFMAM within 60 days of receipt. If you have other concerns or questions regarding your account, or to request an updated copy of PFMAM's current disclosure statement, please contact a member of your client management team at PFMAM Service Operations at the address below.

PFM Asset Management LLC
Attn: Service Operations
213 Market Street
Harrisburg, PA 17101

NOT FDIC INSURED **NO BANK GUARANTEE** **MAY LOSE VALUE**

COLORADO STATEWIDE INVESTMENT PROGRAM

Consolidated Summary Statement

Account Statement

For the Month Ending **June 30, 2023**

Crested Butte Fire Protection District

Portfolio Summary

Portfolio Holdings	Cash Dividends and Income	Closing Market Value	Current Yield
CSIP LGIP	9,063.39	1,790,726.11	5.23 %
CSIP TERM	50,261.92	20,980,772.95	* N/A
CSIP Managed Account	24,057.03	5,243,956.19	* N/A
Total	**$83,382.34**	**$28,015,455.25**	

** Not Applicable*

Investment Allocation

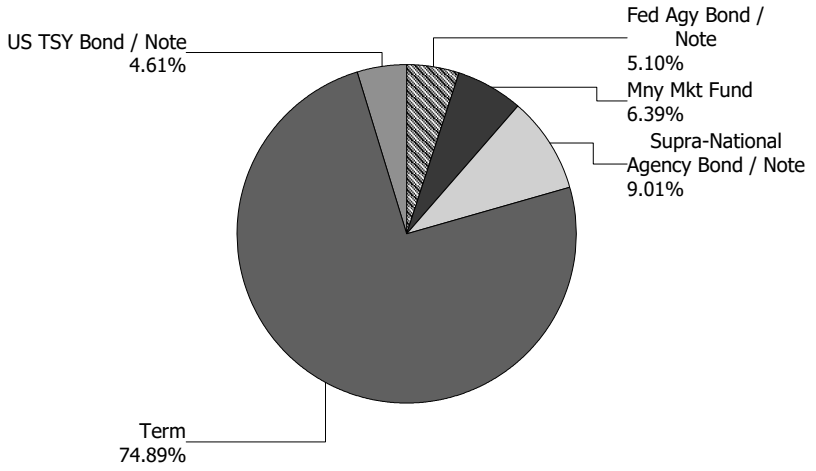
Investment Type	Closing Market Value	Percent
Federal Agency Bond / Note	1,428,421.10	5.10
Money Market Mutual Fund	1,790,726.11	6.39
Supra-National Agency Bond / Note	2,523,457.03	9.01
Term Investment	20,980,772.95	74.89
U.S. Treasury Bond / Note	1,292,078.06	4.61
Total	**$28,015,455.25**	**100.00%**

Maturity Distribution (Fixed Income Holdings)

Portfolio Holdings	Closing Market Value	Percent
Under 30 days	3,528,361.45	12.59
31 to 60 days	3,792,078.06	13.54
61 to 90 days	785,821.69	2.80
91 to 180 days	8,409,194.05	30.02
181 days to 1 year	11,500,000.00	41.05
1 to 2 years	0.00	0.00
2 to 3 years	0.00	0.00
3 to 4 years	0.00	0.00
4 to 5 years	0.00	0.00
Over 5 years	0.00	0.00
Total	**$28,015,455.25**	**100.00%**

Weighted Average Days to Maturity **165**

Sector Allocation



Consolidated Summary Statement

Account Statement

For the Month Ending **June 30, 2023**

Crested Butte Fire Protection District

Account Number	Account Name	Opening Market Value	Purchases / Deposits	Redemptions / Sales/ Maturities	Unsettled Trades	Change in Value	Closing Market Value	Cash Dividends and Income
2210106001	Crested Butte Fire Protection District	26,946,655.01	7,416,639.81	(7,356,012.10)	0.00	26,400.66	27,033,683.38	83,378.09
2210106002	Operating Account Fund	504,910.51	1.41	0.00	0.00	0.00	504,911.92	1.41
2210106003	Bond Payment Fund	476,857.11	2.84	0.00	0.00	0.00	476,859.95	2.84
Total		**$27,928,422.63**	**$7,416,644.06**	**($7,356,012.10)**	**$0.00**	**$26,400.66**	**$28,015,455.25**	**$83,382.34**

Account Statement - Transaction Summary

For the Month Ending **June 30, 2023**

Crested Butte Fire Protection District - Crested Butte Fire Protection District - 2210106001

CSIP LGIP	
Opening Market Value	1,374,099.48
Purchases	3,916,639.81
Redemptions	(3,501,012.10)
Unsettled Trades	0.00
Change in Value	0.00
Closing Market Value	**$1,789,727.19**
Cash Dividends and Income	9,059.14

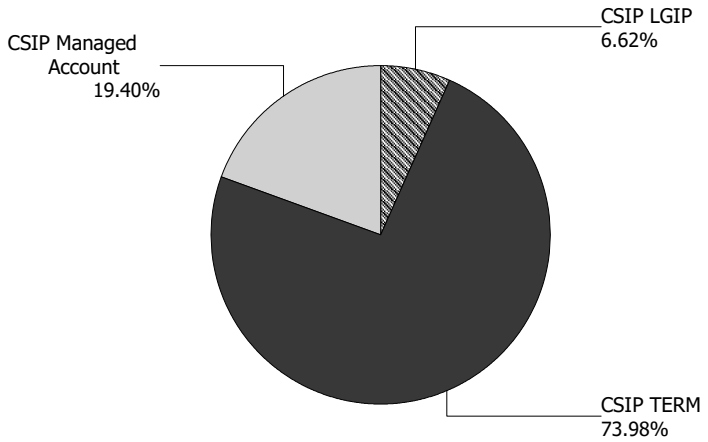
CSIP TERM	
Opening Market Value	18,500,000.00
Purchases	3,500,000.00
Redemptions	(2,000,000.00)
Unsettled Trades	0.00
Change in Value	0.00
Closing Market Value	**$20,000,000.00**
Cash Dividends and Income	50,261.92

CSIP Managed Account	
Opening Market Value	7,072,555.53
Purchases	0.00
Redemptions	(1,855,000.00)
Unsettled Trades	0.00
Change in Value	26,400.66
Closing Market Value	**$5,243,956.19**
Cash Dividends and Income	24,057.03

Asset Summary

	June 30, 2023	May 31, 2023
CSIP LGIP	1,789,727.19	1,374,099.48
CSIP TERM	20,000,000.00	18,500,000.00
CSIP Managed Account	5,243,956.19	7,072,555.53
Total	**$27,033,683.38**	**$26,946,655.01**

Asset Allocation



Investment Holdings

For the Month Ending **June 30, 2023**

Crested Butte Fire Protection District - Crested Butte Fire Protection District - 2210106001

Trade Date	Settlement Date	Security Description	Maturity Date	Rate	Investment Amount	Estimated Earnings	Est. Value at Maturity
CSIP TERM							
03/16/23	03/17/23	TERM - Colorado Statewide Investment Pool Term Dec 24	08/23/23	4.9100	2,500,000.00	35,647.95	2,553,471.92
12/08/22	12/08/22	TERM - Colorado Statewide Investment Pool Term Dec 23	11/03/23	5.1400	2,000,000.00	57,736.99	2,092,942.47
11/08/22	11/09/22	TERM - Colorado Statewide Investment Pool Term Dec 23	11/06/23	5.3400	4,000,000.00	136,938.08	4,211,844.38
02/03/23	02/03/23	TERM - Colorado Statewide Investment Pool Term Dec 24	02/01/24	4.9900	2,000,000.00	40,466.85	2,099,253.15
02/13/23	02/13/23	TERM - Colorado Statewide Investment Pool Term Dec 24	02/13/24	5.0400	2,000,000.00	38,110.68	2,100,800.00
04/18/23	04/19/23	TERM - Colorado Statewide Investment Pool Term Dec 24	04/16/24	5.2400	2,000,000.00	20,902.73	2,103,940.98
05/22/23	05/23/23	TERM - Colorado Statewide Investment Pool Term Dec 24	05/20/24	5.2400	2,000,000.00	11,167.21	2,103,940.98
06/15/23	06/16/23	TERM - Colorado Statewide Investment Pool Term Dec 24	06/11/24	5.8200	3,500,000.00	8,348.36	3,700,917.21
Total					**$20,000,000.00**	**$349,318.85**	**$20,967,111.09**

Managed Account Summary Statement

For the Month Ending **June 30, 2023**

Crested Butte Fire Protection District - Crested Butte Fire Protection District - 2210106001 - (15231590)

Transaction Summary - Money Market	
Opening Market Value	**$1,374,099.48**
Purchases	3,916,639.81
Redemptions	(3,501,012.10)
Closing Market Value	**$1,789,727.19**
Dividend	9,059.14

Transaction Summary - Managed Account	
Opening Market Value	**$7,072,555.53**
Maturities/Calls	(1,855,000.00)
Principal Dispositions	0.00
Principal Acquisitions	0.00
Unsettled Trades	0.00
Change in Current Value	26,400.66
Closing Market Value	**$5,243,956.19**

Account Total	
Opening Market Value	**$8,446,655.01**
Closing Market Value	**$7,033,683.38**

Earnings Reconciliation (Cash Basis) - Managed Account	
Interest/Dividends/Coupons Received	2,318.75
Less Purchased Interest Related to Interest/Coupons	0.00
Plus Net Realized Gains/Losses	21,738.28
Total Cash Basis Earnings	**$24,057.03**

Cash Balance	
Closing Cash Balance	**$0.00**

Earnings Reconciliation (Accrual Basis)	Managed Account	Total
Ending Amortized Value of Securities	5,275,940.83	7,065,668.02
Ending Accrued Interest	9,655.19	9,655.19
Plus Proceeds from Sales	0.00	3,501,012.10
Plus Proceeds of Maturities/Calls/Principal Payments	1,857,318.75	1,857,318.75
Plus Coupons/Dividends Received	0.00	0.00
Less Cost of New Purchases	0.00	(3,916,639.81)
Less Beginning Amortized Value of Securities	(7,127,623.53)	(8,501,723.01)
Less Beginning Accrued Interest	(9,172.36)	(9,172.36)
Dividends	0.00	9,059.14
Total Accrual Basis Earnings	**$6,118.88**	**$15,178.02**

Cash Transactions Summary- Managed Account	
Maturities/Calls	1,857,318.75
Sale Proceeds	0.00
Coupon/Interest/Dividend Income	0.00
Principal Payments	0.00
Security Purchases	0.00
Net Cash Contribution	(1,857,318.75)
Reconciling Transactions	0.00

Portfolio Summary and Statistics

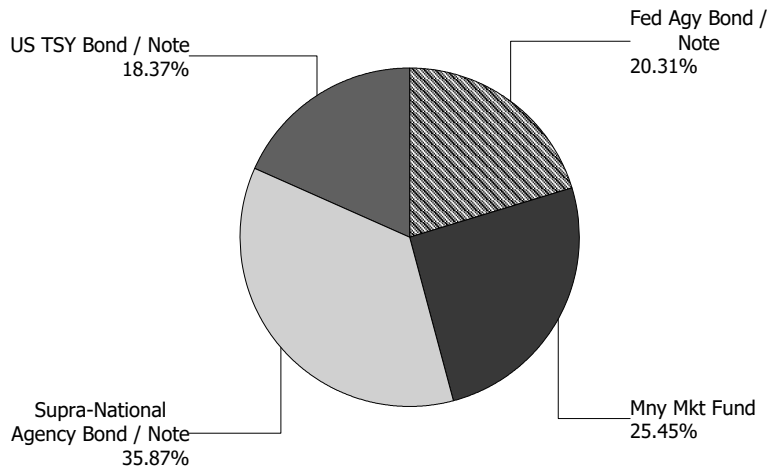
For the Month Ending **June 30, 2023**

Crested Butte Fire Protection District - Crested Butte Fire Protection District - 2210106001 - (15231590)

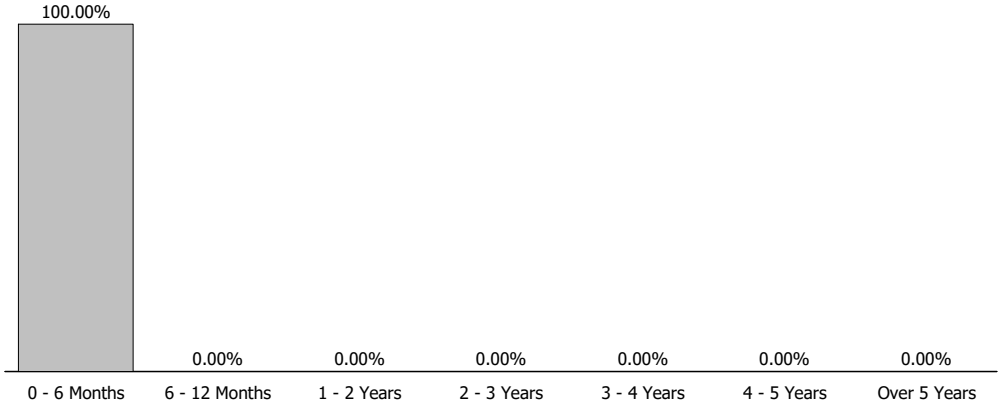
Account Summary

Description	Par Value	Market Value	Percent
U.S. Treasury Bond / Note	1,300,000.00	1,292,078.06	18.37
Supra-National Agency Bond / Note	2,530,000.00	2,523,457.03	35.87
Federal Agency Bond / Note	1,450,000.00	1,428,421.10	20.31
Managed Account Sub-Total	**5,280,000.00**	**5,243,956.19**	**74.55%**
Accrued Interest		9,655.19	
Total Portfolio	**5,280,000.00**	**5,253,611.38**	
CSIP LGIP	1,789,727.19	1,789,727.19	25.45
Total Investments	**7,069,727.19**	**7,043,338.57**	**100.00%**
Unsettled Trades	**0.00**	**0.00**	

Sector Allocation



Maturity Distribution



Characteristics

Yield to Maturity at Cost	1.22%
Yield to Maturity at Market	4.70%
Weighted Average Days to Maturity	58

Managed Account Issuer Summary

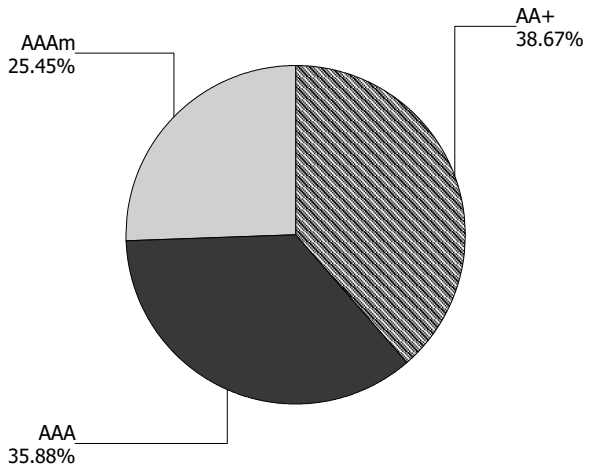
For the Month Ending **June 30, 2023**

Crested Butte Fire Protection District - Crested Butte Fire Protection District - 2210106001 - (15231590)

Issuer Summary

Issuer	Market Value of Holdings	Percent
AFRICAN DEVELOPMENT BANK	785,821.69	11.17
ASIAN DEVELOPMENT BANK	1,737,635.34	24.70
CSIP LGIP	1,789,727.19	25.45
FREDDIE MAC	1,428,421.10	20.31
UNITED STATES TREASURY	1,292,078.06	18.37
Total	**$7,033,683.38**	**100.00%**

Credit Quality (S&P Ratings)



Managed Account Detail of Securities Held

For the Month Ending **June 30, 2023**

Crested Butte Fire Protection District - Crested Butte Fire Protection District - 2210106001 - (15231590)

Security Type/Description Dated Date/Coupon/Maturity	CUSIP	Par	S&P Rating	Moody's Rating	Trade Date	Settle Date	Original Cost	YTM at Cost	Accrued Interest	Amortized Cost	Market Value
U.S. Treasury Bond / Note											
US TREASURY NOTES DTD 08/15/2020 0.125% 08/15/2023	91282CAF8	1,300,000.00	AA+	Aaa	02/09/22	02/10/22	1,279,179.69	1.20	610.50	1,298,299.61	1,292,078.06
Security Type Sub-Total		**1,300,000.00**					**1,279,179.69**	**1.20**	**610.50**	**1,298,299.61**	**1,292,078.06**
Supra-National Agency Bond / Note											
ASIAN DEVELOPMENT BANK NOTES DTD 07/14/2020 0.250% 07/14/2023	045167EV1	1,740,000.00	AAA	Aaa	02/09/22	02/11/22	1,716,927.60	1.19	2,017.92	1,739,420.96	1,737,635.34
AFRICAN DEVELOPMENT BANK BOND DTD 09/20/2018 3.000% 09/20/2023	00828EDC0	790,000.00	AAA	Aaa	02/09/22	02/11/22	811,914.60	1.25	6,649.17	793,029.15	785,821.69
Security Type Sub-Total		**2,530,000.00**					**2,528,842.20**	**1.21**	**8,667.09**	**2,532,450.11**	**2,523,457.03**
Federal Agency Bond / Note											
FREDDIE MAC NOTES DTD 10/16/2020 0.125% 10/16/2023	3137EAEY1	1,450,000.00	AA+	Aaa	02/09/22	02/10/22	1,422,450.00	1.27	377.60	1,445,191.11	1,428,421.10
Security Type Sub-Total		**1,450,000.00**					**1,422,450.00**	**1.27**	**377.60**	**1,445,191.11**	**1,428,421.10**
Managed Account Sub-Total		**5,280,000.00**					**5,230,471.89**	**1.22**	**9,655.19**	**5,275,940.83**	**5,243,956.19**
Money Market Mutual Fund											
CSIP LGIP		1,789,727.19	AAAm	NR			1,789,727.19		0.00	1,789,727.19	1,789,727.19
Liquid Sub-Total		**1,789,727.19**					**1,789,727.19**		**0.00**	**1,789,727.19**	**1,789,727.19**
Securities Sub-Total		**$7,069,727.19**					**$7,020,199.08**	**1.22%**	**$9,655.19**	**$7,065,668.02**	**$7,033,683.38**
Accrued Interest											**$9,655.19**
Total Investments											**$7,043,338.57**

Managed Account Fair Market Value & Analytics

For the Month Ending **June 30, 2023**

Crested Butte Fire Protection District - Crested Butte Fire Protection District - 2210106001 - (15231590)

Security Type/Description Dated Date/Coupon/Maturity	CUSIP	Par	Broker	Next Call Date	Market Price	Market Value	Unreal G/L On Cost	Unreal G/L Amort Cost	Effective Duration	YTM at Mkt
U.S. Treasury Bond / Note										
US TREASURY NOTES DTD 08/15/2020 0.125% 08/15/2023	91282CAF8	1,300,000.00	JPM_CHA		99.39	1,292,078.06	12,898.37	(6,221.55)	0.13	4.95
Security Type Sub-Total		**1,300,000.00**				**1,292,078.06**	**12,898.37**	**(6,221.55)**	**0.13**	**4.95**
Supra-National Agency Bond / Note										
ASIAN DEVELOPMENT BANK NOTES DTD 07/14/2020 0.250% 07/14/2023	045167EV1	1,740,000.00	TD		99.86	1,737,635.34	20,707.74	(1,785.62)	0.04	3.75
AFRICAN DEVELOPMENT BANK BOND DTD 09/20/2018 3.000% 09/20/2023	00828EDC0	790,000.00	JPM_CHA		99.47	785,821.69	(26,092.91)	(7,207.46)	0.23	5.36
Security Type Sub-Total		**2,530,000.00**				**2,523,457.03**	**(5,385.17)**	**(8,993.08)**	**0.10**	**4.25**
Federal Agency Bond / Note										
FREDDIE MAC NOTES DTD 10/16/2020 0.125% 10/16/2023	3137EAEY1	1,450,000.00	RBS		98.51	1,428,421.10	5,971.10	(16,770.01)	0.30	5.26
Security Type Sub-Total		**1,450,000.00**				**1,428,421.10**	**5,971.10**	**(16,770.01)**	**0.30**	**5.26**
Managed Account Sub-Total		**5,280,000.00**				**5,243,956.19**	**13,484.30**	**(31,984.64)**	**0.16**	**4.70**
Money Market Mutual Fund										
CSIP LGIP		1,789,727.19			1.00	1,789,727.19	0.00	0.00	0.00	
Liquid Sub-Total		**1,789,727.19**				**1,789,727.19**	**0.00**	**0.00**	**0.00**	
Securities Sub-Total		**$7,069,727.19**				**$7,033,683.38**	**$13,484.30**	**($31,984.64)**	**0.16**	**4.70%**
Accrued Interest						**$9,655.19**				
Total Investments						**$7,043,338.57**				

Managed Account Security Transactions & Interest

For the Month Ending **June 30, 2023**

Crested Butte Fire Protection District - Crested Butte Fire Protection District - 2210106001 - (15231590)

Transaction Type Trade	Settle	Security Description	CUSIP	Par	Principal Proceeds	Accrued Interest	Total	Realized G/L Cost	Realized G/L Amort Cost	Sale Method
MATURITY										
06/15/23	06/15/23	US TREASURY NOTES DTD 06/15/2020 0.250% 06/15/2023	912828ZU7	1,855,000.00	1,855,000.00	2,318.75	1,857,318.75	21,738.28	0.00	
Transaction Type Sub-Total				**1,855,000.00**	**1,855,000.00**	**2,318.75**	**1,857,318.75**	**21,738.28**	**0.00**	
Managed Account Sub-Total					**1,855,000.00**	**2,318.75**	**1,857,318.75**	**21,738.28**	**0.00**	
Total Security Transactions					**$1,855,000.00**	**$2,318.75**	**$1,857,318.75**	**$21,738.28**	**$0.00**	

Account Statement

For the Month Ending **June 30, 2023**

Crested Butte Fire Protection District - Crested Butte Fire Protection District - 2210106001

Trade Date	Settlement Date	Transaction Description	Share or Unit Price	Dollar Amount of Transaction	Total Shares Owned
CSIP LGIP					
Opening Balance					**1,374,099.48**
06/09/23	06/09/23	Purchase - TERM Maturity	1.00	2,050,261.92	3,424,361.40
06/15/23	06/15/23	Purchase - Principal 912828ZU7	1.00	1,857,318.75	5,281,680.15
06/16/23	06/16/23	Redemption - TERM Investment	1.00	(3,500,000.00)	1,781,680.15
06/23/23	06/23/23	IP Fees May 2023	1.00	(720.43)	1,780,959.72
06/23/23	06/23/23	U.S. Bank Fees April 2023	1.00	(291.67)	1,780,668.05
06/30/23	07/03/23	Accrual Income Div Reinvestment - Distributions	1.00	9,059.14	1,789,727.19
Closing Balance					**1,789,727.19**

	Month of June	Fiscal YTD January-June
Opening Balance	1,374,099.48	2,345,229.22
Purchases	3,916,639.81	13,452,767.09
Redemptions (Excl. Checks)	(3,501,012.10)	(14,008,269.12)
Check Disbursements	0.00	0.00
Closing Balance	**1,789,727.19**	**1,789,727.19**
Cash Dividends and Income	9,059.14	41,635.62

Closing Balance	1,789,727.19
Average Monthly Balance	2,118,226.97
Monthly Distribution Yield	5.20%

Crested Butte Fire Protection District - Crested Butte Fire Protection District - 2210106001

Trade Date	Settlement Date	Transaction Description	Maturity Date	Stated Yield	Dollar Amount of Transaction
CSIP TERM					
06/09/23	06/09/23	Redemption - TERM Maturity			(2,050,261.92)
06/15/23	06/16/23	Purchase - TERM Investment	06/11/24	5.8200	3,500,000.00

Account Statement - Transaction Summary

For the Month Ending **June 30, 2023**

Crested Butte Fire Protection District - Operating Account Fund - 2210106002

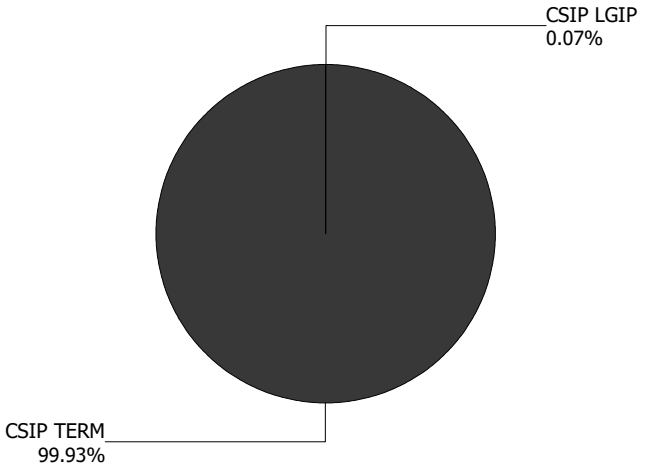
CSIP LGIP	
Opening Market Value	330.11
Purchases	1.41
Redemptions	0.00
Unsettled Trades	0.00
Change in Value	0.00
Closing Market Value	**$331.52**
Cash Dividends and Income	1.41

CSIP TERM	
Opening Market Value	504,580.40
Purchases	0.00
Redemptions	0.00
Unsettled Trades	0.00
Change in Value	0.00
Closing Market Value	**$504,580.40**
Cash Dividends and Income	0.00

Asset Summary

	June 30, 2023	May 31, 2023
CSIP LGIP	331.52	330.11
CSIP TERM	504,580.40	504,580.40
Total	**$504,911.92**	**$504,910.51**

Asset Allocation



Investment Holdings

For the Month Ending **June 30, 2023**

Crested Butte Fire Protection District - Operating Account Fund - 2210106002

Trade Date	Settlement Date	Security Description	Maturity Date	Rate	Investment Amount	Estimated Earnings	Est. Value at Maturity
CSIP TERM							
11/15/22	11/16/22	TERM - Colorado Statewide Investment Pool Term Dec 23	10/10/23	4.9400	504,580.40	15,502.09	526,979.90
Total					**$504,580.40**	**$15,502.09**	**$526,979.90**

Account Statement

For the Month Ending **June 30, 2023**

Crested Butte Fire Protection District - Operating Account Fund - 2210106002

Trade Date	Settlement Date	Transaction Description	Share or Unit Price	Dollar Amount of Transaction	Total Shares Owned
CSIP LGIP					
Opening Balance					**330.11**
06/30/23	07/03/23	Accrual Income Div Reinvestment - Distributions	1.00	1.41	331.52
Closing Balance					**331.52**

	Month of June	Fiscal YTD January-June
Opening Balance	330.11	323.60
Purchases	1.41	7.92
Redemptions (Excl. Checks)	0.00	0.00
Check Disbursements	0.00	0.00
Closing Balance	**331.52**	**331.52**
Cash Dividends and Income	1.41	7.92

Closing Balance	331.52
Average Monthly Balance	330.16
Monthly Distribution Yield	5.20%

Account Statement - Transaction Summary

For the Month Ending **June 30, 2023**

Crested Butte Fire Protection District - Bond Payment Fund - 2210106003

CSIP LGIP

Opening Market Value	664.56
Purchases	2.84
Redemptions	0.00
Unsettled Trades	0.00
Change in Value	0.00
Closing Market Value	**$667.40**
Cash Dividends and Income	2.84

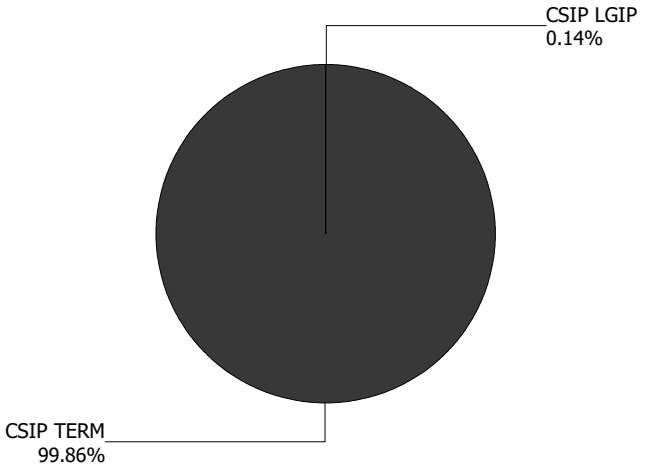
CSIP TERM

Opening Market Value	476,192.55
Purchases	0.00
Redemptions	0.00
Unsettled Trades	0.00
Change in Value	0.00
Closing Market Value	**$476,192.55**
Cash Dividends and Income	0.00

Asset Summary

	June 30, 2023	May 31, 2023
CSIP LGIP	667.40	664.56
CSIP TERM	476,192.55	476,192.55
Total	**$476,859.95**	**$476,857.11**

Asset Allocation



Investment Holdings

For the Month Ending **June 30, 2023**

Crested Butte Fire Protection District - Bond Payment Fund - 2210106003

Trade Date	Settlement Date	Security Description	Maturity Date	Rate	Investment Amount	Estimated Earnings	Est. Value at Maturity
CSIP TERM							
04/18/23	04/19/23	TERM - Colorado Statewide Investment Pool Term Dec 23	10/18/23	5.4200	476,192.55	5,161.93	489,062.01
Total					**$476,192.55**	**$5,161.93**	**$489,062.01**

Account Statement

For the Month Ending **June 30, 2023**

Crested Butte Fire Protection District - Bond Payment Fund - 2210106003

Trade Date	Settlement Date	Transaction Description	Share or Unit Price	Dollar Amount of Transaction	Total Shares Owned
CSIP LGIP					
Opening Balance					**664.56**
06/30/23	07/03/23	Accrual Income Div Reinvestment - Distributions	1.00	2.84	667.40
Closing Balance					**667.40**

	Month of June	Fiscal YTD January-June
Opening Balance	664.56	139,578.20
Purchases	2.84	337,281.75
Redemptions (Excl. Checks)	0.00	(476,192.55)
Check Disbursements	0.00	0.00
Closing Balance	**667.40**	**667.40**
Cash Dividends and Income	2.84	2,281.75

Closing Balance	667.40
Average Monthly Balance	664.65
Monthly Distribution Yield	5.20%

CRESTED BUTTE FIRE PROTECTION DISTRICT

Financial Statements
with
Independent Auditors' Report

For the Year Ended
December 31, 2022

Crested Butte Fire Protection District

Table of Contents

FINANCIAL SECTION

CRESTED BUTTE FIRE PROTECTION DISTRICT
Management's Discussion and Analysis
December 31, 2022

The Management Discussion and Analysis (MD&A) is designed to provide an easy-to-read discussion of the District's financial condition and operating results and to disclose to the reader important financial activities and issues related to the District's basic operations and mission. The MD&A should be read in conjunction with the District's basic financial statements.

Within the government type activities, the District has a general fund, a capital projects fund and a debt service fund. During 2022 the District issued a significant amount of general obligation bonds for new facilities following voter approval in November of 2021. As such the capital projects fund is now seeing activity for the first time in a number of years. Most expenses continue to be accounted for in the general fund, including capital purchases unrelated to the new facilities and existing lease-purchase financing activities. District activities are funded primarily through the District's ad-valorem property tax with supplemental funds derived from fees for services, grants, rental income and intergovernmental transfers.

DESCRIPTION OF FINANCIAL STATEMENTS

This annual report consists of four parts – *management's discussion and analysis* (this section), the *Basic Financial Statements*, *Required Supplementary Information,* The basic financial statements include two kinds of statements that present different views of the District:

- The first two statements, Statement of Net Position and Statement of Activities, are *government-wide financial statements* that provide both *long-term* and *short-term* information about the District's overall financial status.

- The remaining statements are *fund financial statements* that focus on *individual parts* of the District government, reporting the District's operations *in more detail* than the government-wide statements.

The basic financial statements also include *notes* that explain some of the information in the financial statements and provide more detailed data. The basic financial statements are followed by a section of *Required Supplementary Information* that provides a budget and actual comparison for the District's General fund.

Government-wide Statements

The government-wide statements consist of the *Statement of Net Position* and *the Statement of Activities*. These statements report information about the District as a whole and include *all* assets, liabilities and deferred inflow of resources using the accrual basis of accounting, which is similar to the accounting used by most private-sector companies. All of the current year's revenues and expenses are taken into account regardless of when cash is received or paid.

These two statements report the District's *net position* and changes in them. The District's net position – the difference between assets, liabilities and deferred inflow of resources – is one way to measure the District's financial health, or *financial position*. Over time, increases or decreases in the District's net position are one indicator of whether its financial health is improving or deteriorating. Other non-financial factors, however, such as changes in the District's property tax base are needed to assess the overall health of the District.

Fund Financial Statements
The fund financial statements provide more detailed information about the District's funds, focusing on its most significant funds – not the District as a whole.

The District's activity in the governmental funds focuses on how money flows into and out of these funds. The District's primary governmental fund, the general fund, is reported using an accounting method called modified accrual accounting, which measures cash and all of other financial assets that can readily be converted to cash. The governmental fund statements provide a detailed short-term view of the District's general governmental operations and the basic services it provides. Governmental fund information helps to determine whether there are more or fewer financial resources that can be spent in the near future to finance the District's programs.

HIGHLIGHTS OF GOVERNMENTAL ACTIVITIES

- As of December 31, 2022 the governmental funds held $37,847,581 in assets that were readily convertible to cash.
- As of December 31, 2022, the District's governmental activities held $(20,430,019) in net investment in capital assets. As of December 31, 2022 the District has long term debt of $27,503,202.

STATEMENTS OF NET POSITION

The perspective of the statement of Net Position is of the District as a whole. The following is a summary of the District's Net Position for 2021 compared to 2020:

CONDENSED STATEMENT OF NET POSITION

	Governmental Activities	
	2022	**2021**
ASSETS		
Current and Other Assets	$ 37,847,581	$ 7,422,211
Capital Assets	8,185,087	4,906,058
Total Assets	46,032,668	12,328,269
DEFERRED OUTFLOWS	780,197	1,042,688
LIABILITIES		
Current Liabilities	262,640	125,307
Noncurrent Liabilities	27,503,202	1,138,846
Total Liabilities	27,765,842	1,264,153
DEFERRED INFOWS	11,064,571	6,085,370
NET POSITION		
Net Investment in Capital Assets	(20,430,019)	3,606,668
Restricted	31,107,607	964,988
Unrestricted	(2,695,136)	1,450,816
Total Net Position	$ 7,982,452	$ 6,022,472

STATEMENT OF ACTIVITIES

The perspective of the statement of activities is of the District as a whole. The following table reflects the change in Net Position for fiscal year 2021 and 2020.

CONDENSED STATEMENT OF ACTIVITIES

	Governmental Activities	
	2022	**2021**
PROGRAM REVENUES		
Charges for Services	$ 1,042,793	$ 558,117
Operating Grants	42,840	74,386
Capital Grants	-	15,000
Total Program Revenues	1,085,633	647,503
GENERAL REVENUES		
Property Taxes	5,051,307	2,886,304
Specific Ownership Taxes	320,473	205,671
Interest Income	124,365	7,837
Other Revenues	20	39,248
Total General Revenues	5,496,165	3,139,060
Total Revenues	6,581,798	3,786,563
PROGRAM EXPENSES		
General Government	1,582,800	1,291,337
Fire Protection	2,273,183	2,700,543
Interest on Debt	765,835	14,487
Total Program Expenses	4,621,818	4,006,367
CHANGE IN NET POSITION	1,959,980	(219,804)
Net Position, Beginning	6,022,472	6,242,276
NET POSITION, ENDING	**$ 7,982,452**	**$ 6,022,472**

GOVERNMENTAL ACTIVITIES

The cost of governmental activities this year was $4,621,818 compared to $4,006,367 in the prior year. This increase is primarily the result of additional investments in full-time staff, staff salaries, and benefits. The District also purchased an additional 5.6 acres of via a multi-year purchase agreement to accommodate new station facilities. The table below presents the cost of each of the District's programs – general government -- public safety services – and interest on debt as well as each program's net cost (total cost less revenues generated by the activities). The net cost shows the financial burden that was placed on the District's taxpayers by each of these functions for the last year.

THE DISTRICT'S FUNDS

As the District completed the year, its general fund (shown on page 6 of the financial statements) reported a fund balance of $3,079,642, an increase of $837,209 over the previous year. The decrease in 2021 was $319,514.

GENERAL FUND BUDGETARY HIGHLIGHTS

The general fund expenditures were approximately $2,346,788 less than budgeted (exclusive of contingency and reserves). General fund actual revenues were $769,194 more than budgeted amounts.

CAPITAL ASSETS AND DEBT ADMINISTRATION

CAPITAL ASSETS

At year end the District had $6,989,294 invested in the cost of its capital assets. The most significant capital assets the District holds are land, District facilities, its fleet of fire emergency and support vehicles, related, equipment and member housing units which account for approximately $11,604,183 before depreciation. The table below summarizes the District's capital assets by category.

	Balance 12/31/2021	Additions	Deletions	Balance 12/31/2022
Governmental-Type Activities				
Capital Assets not being depreciated:				
Land	$ 552,380	$ 1,955,123	$ -	$ 2,507,503
Construction in Progress	249,454	331,211	-	580,665
Total Capital Assets not being depreciated	801,834	2,286,334	-	3,088,168
Capital Assets being depreciated:				
Buildings	3,523,171	-		3,523,171
Vehicles	4,363,107	147,202	-	4,510,309
Medical Equipment	253,367	-	-	253,367
Other Equipment	96,337	6,956	-	103,293
Lease Assets	-	125,875	-	125,875
Total Capital Assets being depreciated	8,235,982	280,033	-	8,516,015
Less: Accumlated Depreciation				
Buildings	(1,082,092)	(76,659)	-	(1,158,751)
Vehicles	(3,128,047)	(105,047)	-	(3,233,094)
Medical Equipment	(117,508)	(27,271)	-	(144,779)
Other Equipment	(37,320)	(9,035)	-	(46,355)
Lease Assets	-	(31,910)	-	(31,910)
Total Accumulated Depreciation	(4,364,967)	(249,922)	-	(4,614,889)
Net Capital Assets	$ 4,672,849	$ 2,316,445	$ -	$ 6,989,294

DEBT OUTSTANDING

In 2022 the District issued $25,315,000 in general obligation bonds payable over 25 years that yielded $30,000,000 in capital project funds after expenses. Additionally, in 2020 the District re-financed a 15-year lease-purchase arrangement to partially finance construction of a member housing triplex unit for $713,140. The District also maintains liabilities for unpaid compensated absences and liabilities associated with the District's pension plans.

	Balance 1/1/22	Advances	Repayments	Balance 12/31/22	Current Portion
Capital Lease Payable	$ 666,181	$ -	$ 46,569	$ 619,612	$ 47,647
Building Lease - Condo	-	54,274	26,088	28,186	28,186
Building Lease - Office	-	71,602	2,587	69,015	8,629
2021 Note Payable	400,000	-	100,000	300,000	100,000
2022 Note Payable	-	1,852,500	-	1,852,500	231,563
G.O. Bonds Payable	-	25,315,000	765,000	24,550,000	625,000
Compensated Absences	72,665	11,224	-	83,889	-
Total Obligations	**$ 1,138,846**	**$ 27,304,600**	**$ 940,244**	**$ 27,503,202**	**$ 1,041,025**

ECONOMIC AND OTHER FACTORS

The District's Board of Directors remains attentive to evolving economic trends. The assessed valuation of the District continues to increase at a significant pace. Increased tourism to the area has also increased call volumes driving the need to hire additional response staff capable of meeting daily needs. Both the increase in emergency medical services activity, as well as increased building activity, have also generated additional fee revenue. In addition to paid staff, the District continues to invest in volunteer and part-time members to supplement service delivery and provide surge capacity. As of December 31st, the District employees 15 full-time staff members assigned to field operations with a total force of 22 full-time and 2 regular-part-time employees. This expansion has been funded by the 2017 mill levy increase. Due to recent growth in assessed valuation the District has not been significantly impacted by decreases in the statewide residential assessment ratio.

CONTACTING THE DISTRICT'S FINANCIAL MANAGEMENT

This financial report is designed to provide the general public with a general overview of the District's finances and to show the District's accountability for the money it receives. If you have any questions regarding this report or need additional financial information, please contact:

Sean Caffrey, Chief Executive Officer and Commissioner
CRESTED BUTTE FIRE PROTECTION DISTRICT
P.O. Box 1009
Crested Butte, Colorado 81224
Tel: (970) 349-5333 x620
Fax: (970) 349-0438

Mayberry & Company, LLC
Certified Public Accountants

Member of the American Institute of Certified Public Accountants
Governmental Audit Quality Center
and Private Company Practice Section

Board of Directors
Crested Butte Fire Protection District
Crested Butte, Colorado

Independent Auditors' Report

Opinion

We have audited the accompanying financial statements of the governmental activities and major of Crested Butte Fire Protection District, as of and for the year ended December 31, 2022, and the related notes to the financial statements which collectively comprise Crested Butte Fire Protection District's basic financial statements as listed in the table of contents.

In our opinion, the financial statements referred to above present fairly, in all material respects, the respective financial position of the governmental activities and major fund of the Crested Butte Fire Protection District as of December 31, 2022, and the respective changes in financial position, for the year then ended in accordance with accounting principles generally accepted in the United States of America.

Basis for Opinion

We conducted our audit in accordance with auditing standards generally accepted in the United States of America. Our responsibilities under those standards are further described in the Auditor's Responsibilities for the Audit of Financial Statements section of our report. We are required to be independent of the Crested Butte Fire Protection District and to meet our other ethical responsibilities, in accordance with the relevant ethical requirements related to our audit. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Responsibilities of Management for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with accounting principles generally accepted in the United States of America; and for the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of the financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is required to evaluate whether there are conditions or events, considered in the aggregate, that raise substantial doubt about Crested Butte Fire Protection District's ability to continue as a going concern for twelve months beyond the financial statement date, including any currently known information that may raise substantial doubt shortly thereafter.

Auditors' Responsibility for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinions. Reasonable assurance is a high level of assurance but is not absolute assurance and therefore is not a guarantee that an audit conducted in accordance with generally accepted auditing standards will always detect a material misstatement when it exists. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control. Misstatements are considered material if there is a substantial likelihood that, individually or in the aggregate, they would influence the judgment made by a reasonable user based on the financial statements.

In performing an audit in accordance with generally accepted auditing standards, we:

- Exercise professional judgment and maintain professional skepticism throughout the audit.

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, and design and perform audit procedures responsive to those risks. Such procedures include examining, on test basis, evidence regarding the amounts and disclosures in the financial statements

- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of Crested Butte Fire Protection District internal control. Accordingly, no such opinion is expressed.

- Evaluate the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluate the overall presentation of the financial statements.

- Conclude whether, in our judgment, there are conditions or events, considered in the aggregate, that raise substantial doubt Crested Butte Fire Protection District's ability to continue as a going concern for a reasonable period of time.

We are required to communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit, significant audit findings, and certain internal control-related matters that we identified during the audit.

Report on Summarized Comparative Information

We have previously audited the Crested Butte Fire Protection District's 2021 financial statements, and we expressed an unmodified audit opinion on those audited financial statements in our report dated June 16, 2022. In our opinion, the summarized comparative information presented herein as of and for the year ended December 31, 2021 is consistent, in all material respects, with the audited financial statements from which it has been derived.

Required Supplementary Information

Accounting principles generally accepted in the United States of America require that a management's discussion and analysis, budgetary comparison information, and historical pension information listed in the tables of contents be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Supplementary Information

Our audit was conducted for the purpose of forming opinions on the financial statements that collectively comprise the Crested Butte Fire Protection District's basic financial statements. The individual nonmajor fund financial statements are presented for purposes of additional analysis and are not a required part of the basic financial statements. Such information is the responsibility of management and was derived from and relates directly to the underlying accounting and other records used to prepare the basic financial statements. The information has been subjected to the auditing procedures applied in the audit of the basic financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the basic financial statements or to the basic financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the individual nonmajor fund financial statement fairly stated, in all material respects, in relation to the basic financial statements as a whole.

Maybery + Company, LLC

Englewood, Colorado
May 24, 2023

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Basic Financial Statements

CRESTED BUTTE FIRE PROTECTION DISTRICT

STATEMENT OF NET POSITION
DECEMBER 31, 2022

	GOVERNMENTAL ACTIVITIES
ASSETS AND DEFERRED OUTFLOWS	
ASSETS	
Current Assets	
Cash and Investments	
Cash	$ 42,167
Investments	3,114,978
Restricted Cash and Investments	29,516,535
Receivables	
Property Tax Receivable	5,044,476
Interest Receivable	42,438
Cash with Fiscal Agent	25,453
Prepaid Expenses	61,534
Total Current Assets	37,847,581
Noncurrent Assets	
Capital Assets not being Depreciated	3,088,168
Capital Assets being Depreciated	8,516,015
Accumulated Depreciation	(4,614,889)
Net Pension Asset	1,025,793
Notes Receivable	170,000
Total Noncurrent Assets	8,185,087
TOTAL ASSETS	46,032,668
DEFERRED OUTFLOWS OF FINANCIAL RESOURCES	
Net Deferred Outflows - Statewide Defined Benefit Plan	647,232
Net Deferred Outflows - Volunteer Pension Plan	132,965
TOTAL DEFERRED OUTFLOWS	780,197
TOTAL ASSETS AND DEFERRED OUTFLOWS	$ 46,812,865
LIABILITIES, DEFERRED INFLOWS AND NET POSITION	
LIABILITIES	
Current Liabilities	
Accounts Payable	$ 41,123
Accrued Salaries and Benefits	109,037
Deposits and Escrow	2,200
Accrued Interest Payable	107,176
Unearned Revenue	3,104
Total Current Liabilities	262,640
Noncurrent Liabilities	
Due within one year	1,041,025
Due in more than one year	26,462,177
Total Noncurrent Liabilities	27,503,202
TOTAL LIABILITIES	27,765,842
DEFERRED INFLOWS OF FINANCIAL RESOURCES	
Deferred Property Taxes	5,044,476
Net Deferred Inflows - Statewide Defined Benefit Plan	833,110
Net Deferred Inflows - Volunteer Pension Plan	503,947
Bond Premiums	4,683,038
TOTAL DEFERRED INFLOWS	11,064,571
NET POSITION	
Net Investment in Capital Assets	(20,430,019)
Restricted Net Position	31,107,607
Unrestricted Net Position	(2,695,136)
TOTAL NET POSITION	7,982,452
TOTAL LIABILITIES, DEFERRED INFLOWS AND NET POSITION	$ 46,812,865

The accompanying notes are an integral part of these financial statements.

CRESTED BUTTE FIRE PROTECTION DISTRICT

STATEMENT OF ACTIVITIES
FOR THE YEAR ENDED DECEMBER 31, 2022

		PROGRAM REVENUES		NET (EXPENSE) REVENUE AND CHANGES IN NET POSITION
	EXPENSES	CHARGES FOR SERVICES	OPERATING GRANTS AND CONTRIBUTIONS	GOVERNMENT ACTIVITIES
FUNCTIONS/PROGRAMS				
Government Activities				
Current:				
General Government	$ 1,582,800	$ 1,042,793	$ 42,840	$ (497,167)
Public Safety	2,273,183	-	-	(2,273,183)
Interest on Debt	765,835	-	-	(765,835)
TOTAL GOVERNMENT	$ 4,621,818	$ 1,042,793	$ 42,840	(3,536,185)
GENERAL REVENUES				
Property Taxes				5,051,307
Specific Ownership Taxes				320,473
Interest Income				124,365
Other Revenues				20
TOTAL GENERAL REVENUES AND TRANSFERS				5,496,165
CHANGE IN NET POSITION				1,959,980
NET POSITION - Beginning				6,022,472
NET POSITION - Ending				$ 7,982,452

The accompanying notes are an integral part of the financial statements.

CRESTED BUTTE FIRE PROTECTION DISTRICT

BALANCE SHEET
GOVERNMENTAL FUNDS
DECEMBER 31, 2022
With Comparative Totals for December 31, 2021

		Capital Projects	Debt Service		
	General Fund	Capital Reserve Project Fund	Bond Redemption Fund	GENERAL FUND 2022	GENERAL FUND 2021
ASSETS AND DEFERRED OUTFLOWS					
ASSETS					
Current Assets					
Cash and Investments					
Cash	$ 42,167	$ -	$ -	$ 42,167	$ 22,723
Investments	3,114,978	-	-	3,114,978	2,300,818
Restricted Cash and Investments	-	168,192	29,348,343	29,516,535	-
Receivables					
Property Tax Receivable	3,364,776	1,679,700	-	5,044,476	5,058,701
Interest Receivable	-	-	42,438	42,438	-
Cash with Fiscal Agent	16,427	9,026	-	25,453	18,631
Accounts Receivable	-	-	-	-	20,364
Prepaid Expenses	61,534	-	-	61,534	974
TOTAL ASSETS	$ 6,599,882	$ 1,856,918	$ 29,390,781	$ 37,847,581	$ 7,422,211
LIABILITIES, DEFERRED INFLOWS AND NET POSITION					
LIABILITIES					
Current Liabilities					
Accounts Payable	$ 41,123	$ -	$ -	$ 41,123	$ 35,805
Accrued Salaries and Benefits	109,037	-	-	109,037	77,347
Deposits and Escrow	2,200	-	-	2,200	6,200
Unearned Revenue	3,104	-	-	3,104	1,725
TOTAL LIABILITIES	155,464	-	-	155,464	121,077
DEFERRED INFLOWS OF FINANCIAL RESOURCES					
Deferred Property Taxes	3,364,776	1,679,700	-	5,044,476	5,058,701
FUND BALANCE					
Nonspendable Fund Balance	61,534	-	-	61,534	974
Restricted Fund Balance	513,815	177,218	29,390,781	30,081,814	901,779
Committed Fund Balance	2,122,210	-	-	2,122,210	1,332,162
Unassigned Fund Balance	382,083	-	-	382,083	7,518
TOTAL FUND BALANCE	3,079,642	177,218	29,390,781	32,647,641	2,242,433
TOTAL LIABILITIES, DEFERRED INFLOWS AND FUND BALANCE	$ 6,599,882	$ 1,856,918	$ 29,390,781	$ 37,847,581	$ 7,422,211

The accompanying notes are an integral part of these financial statements.

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CRESTED BUTTE FIRE PROTECTION DISTRICT

RECONCILIATION OF GOVERNMENTAL FUND BALANCE TO GOVERNMENTAL ACTIVITIES NET POSITION
DECEMBER 31, 2022

Fund Balance - Governmental Funds		$ 32,647,641
Capital assets used in governmental activities are not financial resources and are therefore not reported in the funds		
Capital assets, not being depreciated	$ 3,088,168	
Capital assets, being depreciated	8,516,015	
Accumulated depreciation	(4,614,889)	6,989,294
Certain long-term assets are not available to pay for current year expenditures and are therefore deferred in the funds		
Note receivable		170,000
Deferred charges related to the issuance of debt that are amortized over the life of the issue, but are not reported in the funds		
Bond premiums		(4,683,038)
Certain long-term pension related costs and adjustments are not available to pay or are payable currently and are therefore not reported in the funds		
FPPA - Statewide Defined Benefit Plan		
Net pension related deferred outflows	647,232	
Net pension asset (liability)	906,147	
Net pension related deferred inflows	(833,110)	
FPPA - Volunteer Pension Plan		
Net pension related deferred outflows	132,965	
Net pension asset (liability)	119,646	
Net pension related deferred inflows	(503,947)	468,933
Long-term liabilities are not due and payable in the current year and, therefore, are not reported in the funds.		
Bonds payable	(24,550,000)	
Notes payable	(2,152,500)	
Capital leases payable	(716,813)	
Accrued interest payable	(107,176)	
Accrued compensated absences	(83,889)	(27,610,378)
Total Net Position - Governmental Activities		$ 7,982,452

The accompanying notes are an integral part of these financial statements.

CRESTED BUTTE FIRE PROTECTION DISTRICT

STATEMENT OF REVENUES, EXPENDITURES AND CHANGES IN FUND BALANCE
GOVERNMENTAL FUNDS
FOR THE YEAR ENDED DECEMBER 31, 2022
With Comparative Totals for the Year Ended December 31, 2021

		Capital Projects	Debt Service		
	General Fund	Capital Reserve Project Fund	Bond Redemption Fund	GENERAL FUND 2022	GENERAL FUND 2021
REVENUES					
Taxes	$ 3,473,331	$ 1,898,449	$ -	$ 5,371,780	$ 3,091,975
Intergovernmental Revenues	41,840	-	-	41,840	65,986
Charges for Services	1,042,794	-	-	1,042,794	558,117
Investment Earnings	61,567	14,137	48,661	124,365	7,837
Other Revenues	1,020	-	-	1,020	12,515
TOTAL REVENUES	4,620,552	1,912,586	48,661	6,581,799	3,736,430
EXPENDITURES					
Current:					
General Government	1,248,958	53,892	245,141	1,547,991	1,109,286
Public Safety	2,436,050	-	-	2,436,050	2,047,169
Capital Outlay	280,534	-	2,286,334	2,566,868	1,237,893
Debt Service	193,129	1,681,476	-	1,874,605	61,626
TOTAL EXPENDITURES	4,158,671	1,735,368	2,531,475	8,425,514	4,455,974
REVENUES IN EXCESS (DEFICIENCY) OF EXPENDITURES	461,881	177,218	(2,482,814)	(1,843,715)	(719,544)
OTHER FINANCING SOURCES (USES)					
Debt Proceeds	125,875	-	32,123,048	32,248,923	400,000
Transfers (In)	249,453	-	-	249,453	-
Transfers (Out)	-	-	(249,453)	(249,453)	-
NET CHANGE IN FUND BALANCE - GAAP BASIS	837,209	177,218	29,390,781	30,405,208	(319,544)
FUND BALANCE, BEGINNING	2,242,433	-	-	2,242,433	2,561,977
FUND BALANCE, ENDING	$ 3,079,642	$ 177,218	$ 29,390,781	$ 32,647,641	$ 2,242,433

The accompanying notes are an integral part of these financial statements.

CRESTED BUTTE FIRE PROTECTION DISTRICT

RECONCILIATION OF GOVERNMENTAL FUNDS CHANGE IN FUND BALANCE TO GOVERNMENTAL ACTIVITIES CHANGE IN NET POSITION
FOR THE YEAR ENDED DECEMBER 31, 2022

Change in Fund Balance - Governmental Funds		$ 30,405,208
Capital assets used in governmental activities are expensed when purchased in the funds and depreciated at the activity level		
Capitalized Asset Purchases	2,566,367	
Depreciation Expense	(249,922)	2,316,445
Pension expense at the fund level represents cash contributions to the defined benefit plan. For the activity level presentation, the amount represents the actuarial cost of the benefits for the fiscal year.		
Net change in Statewide Defined Benefit Plan	259,023	
Net change in Volunteer Pension Plan	130,682	389,705
Repayments of long-term liabilities are expensed in the fund and reduce outstanding liabilities at the activity level. In addition, proceeds from long-term debt issuances are reported as revenues in the funds and increase liabilities at the activity level		
Proceeds from debt issuances	(27,293,376)	
Premiums from debt issuances	(4,955,548)	
Principal payments on bonds payable	765,000	
Principal payments on notes payable	100,000	
Principal payments on capital leases	75,244	
Change in accrued interest payable	(103,984)	
Amortization of premiums and discounts	272,510	
Change in accrued compensated absences	(11,224)	(31,151,378)
Change in Net Position - Governmental Activities		$ 1,959,980

The accompanying notes are an integral part of these financial statements.

CRESTED BUTTE FIRE PROTECTION DISTRICT

NOTES TO FINANCIAL STATEMENTS
December 31, 2022

NOTE 1: SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

The financial statements of Crested Butte Fire Protection District have been prepared in conformity with Generally Accepted Accounting Principles (GAAP) as applied to government units. The Governmental Accounting Standards Board (GASB) is the accepted standard-setting body for establishing governmental accounting and financial reporting principles. The following summary of significant accounting policies is presented to assist the reader in evaluating the District's financial statements.

Reporting Entity

Crested Butte Fire Protection District is a political subdivision of the State of Colorado governed by a five member board of directors. As required by generally accepted accounting principles, these financial statements present the Crested Butte Fire Protection District (the primary government) and its component units. Component units are legally separate organizations for which the elected officials of the primary government are financially accountable, or other organizations for which the nature and significance of their relationship with the primary government are such that exclusion would cause the District's financial statements to be misleading or incomplete. Based upon the foregoing criteria, there are no component units included in the accompanying financial statements.

Nature of Operations

The District provides fire and rescue services for citizens in and around the communities of Crested Butte, including ambulance transportation and enforcement of fire safety codes.

Basic Financial Statements

Basic financial statements are presented at both the government-wide and fund financial level. Governmental activities, which are normally supported by taxes and intergovernmental revenues, are reported separately from business-type activities, which rely to a significant extent on fees and charges for support.

Government-wide financial statements report information about the reporting government as a whole. For the most part, the effect of interfund activity has been removed from these statements. These statements focus on the sustainability of the District as an entity and the change in aggregate financial position resulting from the activities of the year. These aggregated statements consist of the Statement of Net Position and the Statement of Activities.

The statement of activities demonstrates the degree to which the direct expenses of a given function are offset by program revenues. Direct expenses are those that are clearly identifiable with a specific function or business-type activity. Program revenues include 1) charges to customers or applicants who purchase, use, or directly benefit from goods, services, or privileges provided by a given function or business-type activity and 2) grants and contributions that are restricted to meeting the operational or capital requirements of a particular function or business type activity. Taxes and other items not included among program revenues are reported instead as general revenues.

NOTE 1: SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (Continued)

Basic Financial Statements (Continued)

Fund financial statements report information at the individual fund level. Each fund is considered to be a separate accounting entity. Funds are classified as governmental or fiduciary. Major individual governmental funds are reported as separate columns in the fund financial statements. Non-major funds are consolidated into a single column in the financial section of the basic financial statements.
The District has no fiduciary funds.

Measurement Focus, Basis of Accounting, and Financial Statement Presentation

The government-wide financial statements are reported using the economic resources measurement focus and the accrual basis of accounting. Revenues are recorded when earned and expenses are recorded when a liability is incurred, regardless of the timing of the related cash flows. Property taxes are recognized as revenues in the year for which they are levied. Grants and similar items are recognized as soon as all eligibility requirements imposed by the provider have been met.

Governmental fund financial statements are reported using the current financial resources measurement focus and the modified accrual basis of accounting. Revenues are recognized as soon as they are both measurable and available. Revenues are considered to be available when they are collectible within the current period or soon enough thereafter to pay liabilities of the current period. For this purpose, the District considers revenues to be available if they are collected within 60 days after year end. Expenditures are recorded when the related fund liability is incurred. However, debt service expenditures, as well as expenditures related to compensated absences and claims and judgments, are recorded only when payment is due.

Property taxes, grant revenue, and interest associated with the current fiscal period are all considered to be susceptible to accrual and so have been recognized as revenues of the current fiscal period. All other revenue items are considered to be measurable and available only when cash is received by the District.

Expenditures are generally recognized under the modified accrual basis of accounting when the related fund liability is incurred. An exception to this general rule is principal and interest on general long-term debt which is recognized when due.

The District reports the following major governmental funds:

General Fund
This fund accounts for the financial resources of the District which are not accounted for in any other fund. Principal sources of revenue are property taxes, intergovernmental revenue and interest. Primary expenditures are for fire protection and general administration.

NOTE 1: SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (Continued)

Measurement Focus, Basis of Accounting, and Financial Statement Presentation

Capital Projects Fund
This fund accounts for the District's routine capital projects.

Debt Service Fund
This fund is used to account for the repayment of the District's general obligation indebtedness.

Budgets

Generally annual budgets are adopted on a basis consistent with generally accepted accounting principles for all funds. Encumbrances are not employed by the District.

Budgetary Practices

The District adheres to the following procedures in establishing budgets reflected in the financial statements:

- From September through November, the designated budget officer assembles the information for the budget related to the ensuing year.
- Public hearings are held to obtain taxpayer comment.
- Prior to December 31, the budget is adopted by formal resolution.
- Appropriations lapse at year end.
- The Board of Directors may amend the budget during the year.

Cash and Equivalents

The government's cash and cash equivalents are considered to be cash on hand, demand deposits, and short-term investments with original maturities of three months or less from the date of acquisition.

Investments

Investments are stated at fair value based on quoted market values, with the exception of money market funds and external investment pools. These are stated at cost, which is equal to fair value.

Receivables

In the government-wide statements, receivables consist of all revenues earned at year-end and not yet received.

Governmental funds report deferred inflows of resources, as further described below in connection with receivables for revenues that are deferred for use during the next fiscal year. At the end of the current year, these receivables consisted of property taxes levied in 2022 and due in 2023.

NOTE 1: SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (Continued)

Capital Assets

Capital assets, which include land, buildings, vehicles and equipment, are reported in the governmental activities column of the government-wide financial statements. Capital assets are defined by the District as assets with an initial, individual cost of more than $5,000 and a useful life of more than three years. Such assets are recorded at historical cost or estimated historical cost if purchased or constructed. Donated or annexed capital assets are recorded at estimated market value at the date of donation or annexation.

The costs of normal maintenance and repairs that do not add to the value of the asset or materially extend assets lives are not capitalized. Major outlays for capital assets and improvements are capitalized as projects are constructed.

Depreciation on exhaustible assets is recorded as an allocated expense in the Statement of Activities with accumulated depreciation reflected in the Statement of Net Position. Depreciation on the remaining capital assets is provided on the straight-line basis over the following estimated useful lives:

Buildings	35-40 years
Fire Equipment	5-20 years
Medical Equipment	5-20 years
Other Equipment	5-7 years

Compensated Absences

The District has the following policy for compensated vacation pay.

1st year of employment	½ day per month
2nd - 5th year of employment	1 day per month
After 5 years	1 ½ days per month

Deferred Outflows and Inflows of Resources

In addition to assets and liabilities, the statement of net position will sometimes report a separate section for deferred outflows and inflows of resources. These separate financial statement elements, deferred outflows of financial resources and deferred inflows of financial resources, represent a usage or acquisition of net position that applies to a future period(s) and so will not be recognized as an outflow of resources (expense) or inflow of resources (revenue) until a future period. The government has two types of items, which arise under the full accrual and modified accrual basis of accounting. Deferred property taxes are reported as a deferred inflow for both the governmental activities presentation and governmental funds balance sheet.

NOTE 1: SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (Continued)

Deferred Outflows and Inflows of Resources (Continued)

The unavailable property taxes are deferred and will be recognized as an outflow or inflow of resources in the period that the amounts become recognizable as an expense or available, respectively. Since property tax revenues are collected in arrears during the succeeding year, a receivable and corresponding deferred inflow is recorded at December 31. As the tax is collected in the succeeding year, the deferred inflow is recognized as revenue and the receivable is reduced. The other item, deferred charge on refunding, is reported in the governmental activities net position. The charge will be recognized proportionately as the outstanding principal is repaid.

Long-Term Obligation

Long-term debt is reported at face value, net of applicable discounts and deferred charge on refunding. Costs related to the issuance of debt are expensed when incurred. Long-term debt and other long-term obligations are reported as liabilities in the applicable governmental activities statements of net position.

Net Position/Fund Balances Flow Assumptions

Sometimes the government will fund outlays for a particular purpose from both restricted and unrestricted resources (the total of committed, assigned, and unassigned fund balance). In order to calculate the amounts to report as restricted, committed, assigned, and unassigned fund balance in the governmental fund financial statements a flow assumption must be made about the order in which the resources are considered to be applied. It is the government's policy to consider restricted fund balance to have been depleted before using any of the components of unrestricted fund balance. Further, when the components of unrestricted fund balance can be used for the same purpose, committed fund balance is depleted first, followed by assigned fund balance. Unassigned fund balance is applied last.

Net Position/Fund Balances

In the government-wide financial statements, net position is either shown as net investment in capital assets, with these assets essentially being nonexpendable; restricted when constraints placed on the net position are externally imposed; or unrestricted.

For the governmental fund presentation, fund balances that are classified as "nonspendable" include amounts that cannot be spent because they are either (a) not in spendable form or (b) legally or contractually required to be maintained intact. The "not in spendable form" criterion includes items that are not expected to be converted to cash, for example, inventories and prepaid amounts.

Amounts are reported as "restricted" when constraints placed on the use of resources are either (a) externally imposed by creditors (such as through debt covenants), grantors, contributors, or laws or regulations of other governments; or (b) imposed by law through constitutional provisions or enabling legislation.

NOTE 1: SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (Continued)

Net Position/Fund Balances (Continued)

Amounts that can only be used for specific purposes pursuant to constraints imposed by formal action of the government's highest level of decision-making authority, the Board of Directors, reported and at their highest level of action are reported as "committed" fund balance. Those committed amounts cannot be used for any other purpose unless the government removes or changes the specified use by taking the same type of action (for example, legislation, resolution, ordinance) it employed to previously commit those amounts.

Amounts that are constrained by the government's intent to be used for specific purposes, but are neither restricted nor committed, are reported as "assigned" fund balance. Intent should be expressed by (a) the governing body itself or (b) a body (a budget or finance committee, for example) or official to which the governing body has delegated the authority to assign amounts to be used for specific purposes.

All remaining governmental balances or deficits in other governmental funds are presented as unassigned.

Program Revenues

Amounts reported as program revenues include 1) charges to customers or applicants who purchase, use, or directly benefit from goods, services, or privileges provided by a given function or segment and 2) grants and contributions (including special assessments) that are restricted to meeting the operational or capital requirements of a particular function or segment. All taxes, including those dedicated for specific purposes, and other internally dedicated resources are reported as general revenues rather than as program revenues.

Property Taxes

Property taxes are levied on November 1 and attach as an enforceable lien on property on January 1. Taxes are payable in full on April 30 or in two installments on February 28 and June 15. The County Treasurer's office collects property taxes and remits to the District on a monthly basis.

Accumulated Unused Leave/Compensated Absences

The District permits an employee to carry over unused personal leave to the next calendar year. The District will compensate an employee for any unused vacation and compensatory time at their current rate of pay upon termination or resignation. The District does not payout unused sick leave upon termination.

Use of Estimates

The preparation of financial statements in accordance with generally accepted accounting principles requires management to make estimates that affect amounts reported in the financial statements during the reporting period. Actual results could differ from such estimates.

NOTE 1: SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (Continued)

COMPARATIVE DATA

Comparative total data for the prior year has been presented in the accompanying basic financial statements in order to provide an understanding of changes in the District's financial position and operations. However, comparative data has not been presented in each of the statements since their inclusion would make the statements unduly complex and difficult to understand.

NOTE 2: CASH AND INVESTMENTS

The District's cash and investment balances as of the year ended December 31, 2022 are as follows:

Deposits	$	42,167
Investments		3,114,978
Restricted Cash and Investments		29,516,535
Total Cash and Investments	$	32,673,680

DEPOSITS

Custodial Credit Risk - Deposits

In the case of deposits, this is the risk that in the event of bank failure, the government's deposits may not be returned to it. The District's deposit policy is in accordance with CRS 11-10.5-101, The Colorado Public Deposit Protection Act (PDPA), which governs the investment of public funds. PDPA requires that all units of local government deposit cash in eligible public depositories. Eligibility is determined by state regulations. Amounts on deposit in excess of federal insurance levels ($250,000) must be collateralized by eligible collateral as determined by the PDPA. The financial institution is allowed to create a single collateral pool for all public funds held. The pool is to be maintained by another institution, or held in trust for all the uninsured public deposits as a group. The market value of the collateral must be at least equal to 102% of the uninsured deposits. The institution's internal records identify collateral by depositor and as such, these deposits are considered uninsured but collateralized. The State Regulatory Commissions for banks and financial services are required by statute to monitor the naming of eligible depositories and December 31, 2022, all of the District's deposits as shown below were either insured by federal depository insurance or collateralized under PDPA and are therefore not deemed to be exposed to custodial credit risk.

At December 31, 2022 the District's deposits are categorized as follows:

		Bank Balance		Carrying Balance
FDIC Insured	$	250,000	$	250,000
PDPA Collateralized		345,447		338,346
Total Bank Deposits	$	595,447	$	588,346

NOTE 2: CASH AND INVESTMENTS (Continued)

INVESTMENTS

Credit Risk

Colorado statutes specify which instruments units of local government may invest, which include:

- Obligations of the United States and certain U.S. government agency securities
- Certain international agency securities
- General obligation and revenue bonds of the U.S. local government entities
- Bankers' acceptances of certain banks
- Commercial paper
- Local government investment pools
- Written repurchase agreements collateralized by certain authorized securities
- Certain money market funds
- Guaranteed investment contracts

During the year ended December 31, 2022, the District's invested funds in the Colotrust. As investment pools, they operate under the Colorado Revised Statutes (24-75-701) and are overseen by the Colorado Securities Commissioner. They invest in securities that are specified by Colorado Revised Statutes (24-75-601). Authorized securities include U.S. Treasuries, U.S. Agencies, commercial paper (rated A1 or better) and bank deposits (collateralized through PDPA). The pools operate similar to a 2a-7-like money market fund with a share value equal to $1.00 and a maximum weighted average maturity of 60 days. These funds are rated AAAm by the Standard and Poor's Corporation.

Concentration of Credit Risk

The District places no limit on the amount that may be invested in any one issuer.

Interest Rate Risk

Colorado Statutes require that no investment may have a maturity in excess of five years from the date of purchase unless authorized by the local board. The District does not have a formal investment policy that limits investment maturities as a means of managing its exposure to fair value losses arising from increasing interest rates, other than those contained in state statutes.

Custodial Credit Risk – Investments

For an investment, custodial credit risk is the risk that, in the event of the failure of the counterparty, the District will not be able to recover the value of its investments or collateral securities that are in the possession of an outside party. As of December 31, 2022, the District did not have any investments requiring safekeeping.

NOTE 3: NOTE RECEIVABLE - RELATED PARTY

On January, 2020, the District sold a piece of land and entered into a $170,000 promissory note with a related party. The note is payable upon subsequent property sale and is a non-interest bearing loan.

NOTE 4: CAPITAL ASSETS

Changes in governmental activities capital assets for the year ended December 31, 2022 was as follows:

	Balance 12/31/2021	Additions	Deletions	Balance 12/31/2022
Governmental-Type Activities				
Capital Assets not being depreciated:				
Land	$ 552,380	$ 1,955,123	$ -	$ 2,507,503
Construction in Progress	249,454	331,211	-	580,665
Total Capital Assets not being depreciated	801,834	2,286,334	-	3,088,168
Capital Assets being depreciated:				
Buildings	3,523,171	-		3,523,171
Vehicles	4,363,107	147,202	-	4,510,309
Medical Equipment	253,367	-	-	253,367
Other Equipment	96,337	6,956	-	103,293
Lease Assets	-	125,875	-	125,875
Total Capital Assets being depreciated	8,235,982	280,033	-	8,516,015
Less: Accumlated Depreciation				
Buildings	(1,082,092)	(76,659)	-	(1,158,751)
Vehicles	(3,128,047)	(105,047)	-	(3,233,094)
Medical Equipment	(117,508)	(27,271)	-	(144,779)
Other Equipment	(37,320)	(9,035)	-	(46,355)
Lease Assets	-	(31,910)	-	(31,910)
Total Accumulated Depreciation	(4,364,967)	(249,922)	-	(4,614,889)
Net Capital Assets	$ 4,672,849	$ 2,316,445	$ -	$ 6,989,294

Depreciation has been allocated on the statement of activities as follows:

General Government	$ 111,577
Public Safety	138,345
Total Depreciation	$ 249,922

NOTE 5: LONG-TERM OBLIGATIONS

The following is a schedule of changes in debt for the year ended December 31, 2022:

	Balance 1/1/22	Advances	Repayments	Balance 12/31/22	Current Portion	Interest Expense	Accrued Interest
Capital Lease Payable	$ 666,181	$ -	$ 46,569	$ 619,612	$ 47,647	$ 14,833	$ 2,969
Building Lease - Condo	-	54,274	26,088	28,186	28,186	-	-
Building Lease - Office	-	71,602	2,587	69,015	8,629	-	-
2021 Note Payable	400,000	-	100,000	300,000	100,000	12,501	11,888
2022 Note Payable	-	1,852,500	-	1,852,500	231,563	4,427	4,427
G.O. Bonds Payable	-	25,315,000	765,000	24,550,000	625,000	1,004,367	87,892
Compensated Absences	72,665	11,224	-	83,889	-	-	-
Total Obligations	**$ 1,138,846**	**$ 27,304,600**	**$ 940,244**	**$ 27,503,202**	**$ 1,041,025**	**$ 1,036,128**	**$ 107,176**
G.O. Bond Premiums	$ -	$ 4,955,548	$ 272,510	$ 4,683,038			

During 2019, the District entered into a lease purchase agreement for the construction of employee housing. The lease was for $730,000 including $30,000 of issuance costs. In 2020, The District paid off the original lease and refinanced in the amount of $713,140. The lease is subject to annual appropriation. Payments of $30,813 are due semi-annually in March and September consisting of both principal and 2.30% interest through March 2034. In the event of default, all current and future lease payments may be declared due, the leased property can be repossessed, require the District to vacate the property, may sell their interest in the property, or lease the property in an effort to collect required rental payments. The District has capitalized assets with a remaining basis of $1,178,343 related to the lease.

Scheduled payments on lease are as follows:

Year	Principal	Interest	Payments
2023	47,647	13,979	61,626
2024	48,750	12,876	61,626
2025	49,877	11,749	61,626
2026	51,031	10,595	61,626
2027	52,211	9,415	61,626
2028-2032	279,742	28,388	308,130
2033-2034	90,354	2,086	92,440
Total	**$ 619,612**	**$ 89,088**	**$ 708,700**

During 2021, the District entered into a building lease agreement for rental housing. The lease was for $54,274. Payments of $2,300 are due monthly consisting of an estimated interest rate of 4.00% through November 2023. In the event of default, the lessor may end lessee's right of occupancy by giving notices required by Colorado Law and exercising legal rights, while not releasing tenant from liability of future rent. After such actions payments may still be received while not waiving or diminishing the lessor's right of eviction or any other contractual or statutory right. Rent acceleration is the right of the lessor in lieu of having rent for the entire term payable when the lease contract begins. The prevailing party shall be entitled to an award of attorney fees and other remedies. The District has capitalized assets with a remaining basis of $27,137 related to the lease.

Scheduled payments on lease are as follows:

Year	Principal	Interest	Payments
2023	$ 28,186	$ 614	$ 28,800

NOTE 5: LONG-TERM OBLIGATIONS (Continued)

During 2022, the District entered into a building lease agreement for office space. The lease was for $71,602. Payments of $822 are due monthly consisting of an estimated interest rate of 4.00% through August 2027. In the event of default, the lessor may elect to give the lessee written notice of intention to terminate the lease on the date of notice or on any later date specified in the notice. Lessee's right to possession of the premises shall cease and this lease shall be terminated. In addition, lessor shall have all other rights available at law and in equity, including, without limitation, recovery of actual damages, costs and expenses including reasonable attorney's fees. The District has capitalized assets with a remaining basis of $66,828 related to the lease.

Scheduled payments on lease are as follows:

Year	Principal	Interest	Payments
2023	8,629	2,622	11,251
2024	13,171	2,019	15,190
2025	17,119	1,577	18,696
2026	17,816	880	18,696
2027	12,280	185	12,465
Total	**$ 69,015**	**$ 7,283**	**$ 76,298**

During 2021, the District entered into a land purchase agreement with a loan in the amount of $400,000. Payments of $100,000 are due annually in January consisting of both principal and 4.00% interest through March 2025. In the event of default, the entire amount outstanding and accrued interest thereon shall at once become due and payable at the option of the note holder. The indebtedness shall bear interest at the rate of 8.00% per annum from the date of default. Note holder shall be entitled to collect all reasonable cost and expense of collection and/or suit, including, but not limited to reasonable attorney's fees. The District has capitalized assets with a remaining basis of $552,380 related to the land purchase. The District has restricted equity to cover all future debt payments.

Scheduled payments on lease are as follows:

	Year	Principal	Interest	Payments
1/10/2023	2023	$ 100,000	$ 12,222	$ 112,222
1/10/2024	2024	200,000	8,148	208,148
	Total	**$ 300,000**	**$ 20,371**	**$ 320,371**

During 2022, the District entered into a land purchase agreement with a loan in the amount of $1,852,000. Payments ranging from $97,500 to $240,825 are due annually in January consisting of both principal and 4.00% interest through January 2031. In the event of default, the entire amount outstanding and accrued interest thereon shall at once become due and payable at the option of the note holder. The indebtedness shall bear interest at the rate of 8.00% per annum from the date of default. Note holder shall be entitled to collect all reasonable cost and expense of collection and/or suit, including, but not limited to reasonable attorney's fees. The District has capitalized assets with a remaining basis of $1,955,123 related to the land purchase. The District has restricted equity to cover all future debt payments.

NOTE 5: LONG-TERM OBLIGATIONS (Continued)

Scheduled payments on lease are as follows:

Year	Principal	Interest	Payments
2023	$ 231,563	$ 5,481	$ 237,044
2024	-	-	-
2025	231,563	132,269	363,831
2026	231,563	55,575	287,138
2027	231,563	46,313	277,875
2028-2031	926,250	92,625	1,018,875
Total	**$ 1,852,500**	**$ 332,262**	**$ 2,184,762**

General Obligation Bonds Payable

In January 2022, the District issued $25,315,000 in general obligation bonds for the purpose of financing capital projects. Principal payments are due annually on December 1, through 2046. Interest payments are due semi-annually on June 1 and December 1, with interest accruing at rates ranging from 4.0% to 5.0%.

Scheduled bond payments are as follows:

Year	Principal	Interest	Payments
2023	625,000	1,054,700	1,679,700
2024	650,000	1,029,700	1,679,700
2025	675,000	1,003,700	1,678,700
2026	705,000	976,700	1,681,700
2027	730,000	948,500	1,678,500
2028-2032	4,115,000	4,280,300	8,395,300
2033-2037	5,005,000	3,388,700	8,393,700
2038-2042	6,090,000	2,304,300	8,394,300
2043-2046	5,955,000	762,750	6,717,750
Total	**$ 24,550,000**	**$ 10,766,000**	**$ 20,151,000**

NOTE 6: PENSION OBLIGATIONS

STATEWIDE DEFINED BENEFIT PLAN (FPPA)

Summary of Significant Accounting Policies

Pensions. The District participates in the Statewide Defined Benefit Plan (SWDB), a cost-sharing multiple-employer defined benefit pension fund administered by the Fire & Police Pension Association of Colorado ("FPPA"). The net pension asset or liability, deferred outflows of resources and deferred inflows of resources related to pensions, pension expense, information about the fiduciary net position and additions to/deductions from the fiduciary net position of the SWDB have been determined using the accrual basis of accounting as required by the accounting principles and reporting guidelines as set forth by the Governmental Accounting Standards Board. For this purpose, benefit payments (including refunds of employee contributions) are recognized when due and payable in accordance with the benefit terms. Investments are reported at fair value.

General Information about the Pension Plan

Plan description. Eligible employees of the District are provided with pensions through the Statewide Defined Benefit Plan (SWDB) - a cost-sharing multiple-employer defined benefit pension plan administered by FPPA. Plan benefits are specified in Title 31, Articles 30, 30.5 and 31 of the Colorado Revised Statutes (C.R.S.), rules and regulations codified by the Fire and Police Pension Association, and applicable provisions of the federal Internal Revenue Code. Colorado State law provisions may be amended from time to time by the Colorado General Assembly. FPPA issues a publicly available comprehensive annual financial report, that can be obtained at htttp://www.FPPAco.org.

Benefits provided. A member is eligible for a normal retirement pension once the member has completed twenty-five years of credited service and has attained the age of 55. Effective January 1, 2021, a member may also qualify for a normal retirement pension if the member's combined years of service and age equals at least 80, with a minimum age of 50 (Rule of 80).

The annual normal retirement benefit is 2 percent of the average of the member's highest three years' pensionable earnings · for each year of credited service up to ten years, plus 2.5 percent for each year of service thereafter. The benefit earned prior to January 1, 2007 for members of affiliated Social Security employers will be reduced by the amount of Social Security income payable to the member annually. Effective January 1, 2007, members covered under Statewide Defined Benefit Social Security Component will receive half the benefit when compared to the Statewide Defined Benefit Plan. Benefit adjustments paid to retired members are evaluated annually and may be re-determined every October 1.

The amount of any increase is based on the Board's discretion and can range from Oto the higher ·of 3 percent or the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

NOTE 5: PENSION PLANS (Continued)

STATEWIDE DEFINED BENEFIT PLAN (FPPA) (Continued)

General Information about the Pension Plan (Continued)

A member is eligible for an early retirement after completion of 30 years of service or attainment of age 50 with at least five years of credited service. The early retirement benefit equals the normal retirement benefit reduced on an actuarially equivalent basis. Upon termination, an employee may elect to have member contributions, along with 5 percent as interest, retuned as a lump sum distribution. Alternatively, a member with at least five years of accredited service may leave contributions with the Plan and remain eligible for a retirement pension at age 55 equal to 2 percent of the member's average highest three years' pensionable earnings for each year of credited service up to ten years; plus 2.5 percent for each year of service thereafter.

Contributions. Contribution rates for employers and members may be increased equally by the FPPA Board of Directors upon approval through an election by both the employers and members.

In 2014, the members elected to increase the member contribution rate to the SWDB plan beginning in 2015. Member contribution rates will increase 0.5 percent annually through 2022 to a total of 12 percent of pensionable earnings. Employer contributions will increase 0.5 percent annually beginning in 2021 through 2030 to a total of 13 percent of pensionable earnings. In 2021, members of the SWDB plan and their employers are contributing at the rate of 11.5 percent and 8.5 percent, respectively, of pensionable earnings for a total contribution rate of 20.0 percent.

Contributions from members and employers of departments reentering the system are established by resolution and approved by the FPPA Board of Directors. The member and employer contribution rates will increase through 2030 as described above for non-reentering departments. Effective January 1, 2021, reentry departments may submit a resolution to the FPPA Board of Directors to reduce the additional 4 percent contribution, to reflect the actual cost of reentry by department, to the plan for reentry contributions. Each reentry department is responsible to remit contributions to the plan in accordance with their most recent FPPA Board of Directors approved resolutions.

The contribution rate for members and employers of affiliated social security employers is 5.75 percent and 4.25 percent, respectively, of pensionable earnings for a total contribution rate of 10.0 percent in 2021. Per the 2014 member election, members of the affiliate social security group had their required contribution rate increase 0.25 percent annually beginning in 2015 through 2022 to a total of 6 percent of pensionable earnings. Employer contributions will increase 0.25 percent annually beginning in 2021 through 2030 to a total of 6.5 percent of pensionable earnings.

NOTE 5: PENSION PLANS (Continued)

STATEWIDE DEFINED BENEFIT PLAN (FPPA) (Continued)

General Information about the Pension Plan (Continued)

Employer contributions are recognized by FPPA in the period in which the compensation becomes payable to the member and the District is statutorily committed to pay the contributions to FPPA. Employer contributions recognized by the FPPA from the District were $114,414 for the plan year ended December 31, 2021 and $141,140 for the fiscal year ended December 31, 2022. The current year contributions will be expensed in 2023 for FPPA purposes, December 31, 2022 employer contributions for reporting as of December 31, 2023, and are a timing difference at year end.

Pension Liabilities, Pension Expense, and Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pensions

At December 31, 2022, the District reported an asset of $906,147 for its proportionate share of the SWDB's net pension liability. The net pension asset or liability was measured as of December 31, 2021, and the total pension liability used to calculate the net pension liability was determined by an actuarial valuation as of January 1, 2022. The District's proportion of the net pension liability was based on District's contributions to the SWDB for the calendar year 2021 relative to the total contributions of participating employers to the SWDB.

At December 31, 2022, the District's proportion was 0.16721%, which was an increase of 0.00402% from its proportion measured as of December 31, 2021.

For the year ended December 31, 2022, the District recognized pension expense of $117,883. At December 31, 2022, the District reported deferred outflows of resources and deferred inflows of resources related to pensions from the following sources:

	Deferred Outflows	Deferred Inflows
Difference between expected and actual experience	$ 208,672	$ (20,394)
Changes of assumptions or other inputs	$ 231,804	$ -
Net difference between projected and actual earnings on pension plan investments	$ 48,554	$ (666,247)
Changes in proportion and differences between contributions recognized and proportionate share of contributions - Plan Basis	$ 17,062	$ (146,469)
Contributions subsequent to the measurement date	$ 141,140	$ -
Total	**$ 647,232**	**$ (833,110)**

$141,140 reported as deferred outflows of resources related to pensions, resulting from contributions subsequent to the measurement date, will be recognized as an adjustment of the net pension asset in the year ended December 31, 2023.

NOTE 5: PENSION PLANS (Continued)

STATEWIDE DEFINED BENEFIT PLAN (FPPA) (Continued)

Pension Liabilities, Pension Expense, and Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pensions (Continued)

Other amounts reported as deferred outflows of resources and deferred inflows of resources related to pensions will be recognized in pension expense as follows:

Year Ended December 31:	Fiscal year Total
2023	$ (118,069)
2024	(166,623)
2025	(100,921)
2026	(34,644)
2027	48,233
2028-2031	45,006
Total	**$ (327,018)**

Actuarial assumptions. The actuarial valuations for the Statewide Defined Benefit Plan were used to determine the total pension liability and actuarially determined contributions for the fiscal year ending December 31, 2021. The valuations used the following actuarial assumption and other inputs:

Actuarial method	Entry Age Normal
Amortization method	Level % of Payroll, Open
Amortization period	30 Years
Long-term investment rate of return, net of pension plan investment expenses, including price inflation *	7.00%
Salary increase, including wage inflation	4.25%-11.25%
Cost of Living Adjustments (COLA)	0.00%
* Includes inflation at	2.50%

For determining the total pension liability, and actuarially determined contributions, the post-retirement mortality tables for non-disabled retirees uses the 2006 central rates from the RP-2014 Annuitant Mortality Tables projected to 2018 using the MP-2017 projection scales, and the projected prospectively using the ultimate rates of the scale for all years. The pre-retirement off-duty mortality tables are adjusted to 50% of the RP-2014 mortality tables for active employees. The on-duty mortality rate is 0.00015.

At least every five years the FPPA's Board of Directors, in accordance with best practices, reviews its economic and demographic actuarial assumptions. At its July 2018 meeting, the Board of Directors reviewed and approved recommended changes to the actuarial assumptions. The recommendations were made by the FPPA's actuaries, Gabriel, Roeder, Smith & Co., based upon their analysis of past experience and expectations of the future. The assumption changes were effective for actuarial valuations beginning January 1, 2019. The actuarial assumptions impact actuarial factors for benefit purposes such as purchases of service credit and other benefits where actuarial factors are used.

NOTE 5: PENSION PLANS (Continued)

STATEWIDE DEFINED BENEFIT PLAN (FPPA) (Continued)

Pension Liabilities, Pension Expense, and Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pensions (Continued)

The long-term expected rate of return on pension plan investments was determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, net of pension plan investment expense and inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighing the expected future real rates of return by the target asset allocation percentage and by adding expected inflation (assumed at 2.5 percent). Best estimates of arithmetic real rates of return for each major asset class included in the Fund's target asset allocation as of December 31, 2021 are summarized in the following table:

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return
Global Equity	39.00%	8.23%
Equity Long/Short	8.00%	6.87%
Private Markets	26.00%	10.63%
Fixed Income - Rates	10.00%	4.01%
Fixed Income - Credit	5.00%	5.25%
Absolute Return	10.00%	5.60%
Cash	2.00%	2.32%
Total	**100.00%**	

The discount rate used to measure the total pension liability was 7.00 percent. The projection of cash flows used to determine the discount rate assumed that contributions from participating employers will be made based on the actuarially determined rates based on the Board's funding policy, which establishes the contractually required rates under Colorado statutes. Based on those assumptions, the SWDB plan fiduciary net position was projected to be available to make all the projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

Discount rate. Projected benefit payments are required to be discounted to their actuarial present values using a single discount rate that reflects (1) a long-term expected rate of return on pension plan investments (to the extent that the plan's fiduciary net position is projected to be sufficient to pay benefits) and (2) tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating as of the measurement date (to the extent that the plan's projected fiduciary net position is not sufficient to pay benefits).

For the purpose of this valuation, the expected rate of return on pension plan investments is 7.00 percent; the municipal bond rate is 1.84 percent (based on the weekly rate closest to but not later than the measurement date of the "state & local bonds" rate from Federal Reserve statistical release (H.15)); and the resulting Single Discount Rate is 7.00 percent.

NOTE 5: PENSION PLANS (Continued)

STATEWIDE DEFINED BENEFIT PLAN (FPPA) (Continued)

Pension Liabilities, Pension Expense, and Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pensions (Continued)

Sensitivity of the proportionate share of the net pension asset (liability) to changes in the discount rate. Regarding the sensitivity of the net pension li ability/(asset) to changes in the Single Discount Rate, the following presents the plan's net pension liability, calculated using a Single Discount Rate of 7.00 percent, as well as what the plan's net pension liability/(asset) would be if it were calculated using a Single Discount Rate that is one percent lower or one percent higher.

	1% Decrease (6.00%)	Current Discount Rate (7.00%)	1% Increase (8.00%)
Proportionate share of the net pension asset (liability)	$ 124,963	$ 906,147	$ 1,553,314

Subsequent Event

Statewide Retirement Plan. During 2022, House Bill 22-1034 was signed into law. This legislation combines the assets and liabilities of the Statewide Defined Benefit Plan and Statewide Hybrid Plan to form the Statewide Retirement Plan effective January 1, 2023. The merger will result in increased longer term stability for both plans in addition to simplification of administrative, operation and communication of benefits. The financial impact of the merger of plans is being determined.

Actuarial Experience Study. During 2022, FPPA engaged Gabriel, Roeder Smith & Co. to complete an actuarial experience study. The FPPA Board of Directors accepted the findings of the study at its July 28, 2022 meeting. These assumptions will be included in the Statewide Retirement Plan valuation as of January 1, 2023.

Volunteer Firefighters Pension Plan

Plan Description

The Volunteer Firefighters Pension Plan is a defined benefit, agent multiple-employer plan affiliated with the Colorado Fire and Police Pension Association (FPPA). Assets of the Plan are commingled for investment purposes in the Fire and Police Member's Benefit Fund, an agent multiple-employer defined benefit pension Plan administered by FPPA.

Description of Benefits

The Plan provides retirement benefits for Members and beneficiaries according to Plan provisions as enacted and governed by the Firefighters Pension Board. Colorado Revised Statutes (CRS), as amended, establishes basic benefit provisions under the Plan. In 2021, the normal retirement benefit was $800 per month. A participant becomes fully vested after 20 years of active service and reaching age 50. Pre-retirement death and disability benefits are only available if incurred in the line of duty. The plan also provides for a lump-sum burial benefit upon the death of an active or retired firefighter. FPPA issues independent annual reports that may be obtained by calling FPPA at (303) 770-3772 in the Denver metro area and 1-800-332-FPPA (3772) from outside the metro area.

NOTE 6: PENSION PLANS (Continued)

Volunteer Firefighters Pension Plan (Continued)

Contributions

The District funds the Plan per provisions in the Plan document and Colorado statutes. The District shall contribute amounts required to fund the benefits provided by the Plan on a sound actuarial basis. The District contributes to the Volunteer Fire Department Pension Fund at a rate determined in the following manner: at least every three (3) years, the Volunteer Fire Department Pension Fund shall have an actuarial study prepared to determine the funds required. The required funds will be paid annually from general revenues of the District into the Volunteer Fire Department Pension Fund. The Volunteer Firefighter's Pension Plan receives contributions from the District in an amount not to exceed one half mill of property tax revenue.

Pension Liabilities, Pension Expense, and Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pensions

As established by the legislature, the State of Colorado contributes up to ninety percent of the District's contribution. The contributions are not actuarially determined.

The Plan is administered by a Retirement Board composed of seven members, the District's five elected board members plus two members elected by the volunteers.

The financial statements of the volunteer Plan are prepared using the accrual basis of accounting. Benefits and refunds are recognized when due and payable in accordance with the terms of the Plan. The investments are presented at fair value except for short-term investments that are recorded at cost, which approximates fair value.

Pension Liabilities, Pension Expense, and Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pensions (Continued)

Administrative costs of the Plan are paid from the pension fund (CRS 31-30.5-204(3)). There are no investments in, loans to, or leases with parties related to the Plan.

At December 31, 2022, the District reported a net pension asset of $119,646. The net pension liability was measured as of December 31, 2021, and the total pension liability used to calculate the net pension asset was determined by an actuarial valuation as of that date.

For the year ended December 31, 2022, the District recognized pension expense of $55,843. At December 31, 2021, the District reported deferred outflows of resources and deferred inflows of resources related to pensions from the following sources:

NOTE 6: PENSION PLANS (Continued)

Volunteer Firefighters Pension Plan (Continued)

Pension Liabilities, Pension Expense, and Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pensions (Continued)

	Deferred Outflows	Deferred Inflows
Difference between expected and actual experience	$ 5,769	$ -
Net difference between projected and actual earnings on pension plan investments	$ 52,194	$ (503,784)
Contributions subsequent to the measurement date	$ 75,000	
Total	**$ 132,963**	**$ (503,784)**

$75,000 reported as deferred outflows of resources related to pensions resulting from District contributions subsequent to the measurement date will be recognized as a reduction of the net pension liability in the year ended December 31, 2023.
Other amounts reported as deferred outflows of resources and deferred inflows of resources related to pensions will be recognized in pension expense as follows:

Year Ended December 31:	Fiscal Year Total
2023	(104,985)
2024	(162,950)
2025	(112,070)
2026	(65,816)
Total	**$ (445,821)**

Actuarial Assumptions

A January 1, 2021 actuarial valuation was used to determine the total pension liability as of the measurement date of December 31, 2021. Actuarially determined contribution rates are calculated as of January 1 of odd numbered years. The contribution rates have a one-year lag, so the actuarial valuation as of January 1, 2019 determines the contribution amounts for 2020 and 2021. The actuarially determined contributions used the following actuarial assumption and other inputs:

NOTE 6: PENSION PLANS (Continued)

Volunteer Firefighters Pension Plan (Continued)

Actuarial Assumptions (Continued)

Actuarial Method	Entry Age Normal
Amortization Method	Level Dollar, Open*
Amortization Period	20 Years*
Asset Valuation Method	5-Year Smoothed Fair Value
Inflation	2.50%
Salary increase, including wage inflation	N/A
Long-term investment Rate of Return	7.00%
Retirement Age	50% per year of eligibility until 100% at age 65
Mortality	Pre-retirement: 2006 central rates from the RP-2014 Employee Mortality Tables for males and females projected to 2018 using the MP-2017 projection scales, and then projected prospectively using the ultimate rates of the scale for all years, 50% multiplier for off-duty mortality
	Post-retirement: 2006 central rates from the RP-2014 Annuitant Mortality Tables for males and females projected to 2018 using the MP-2017 projection scales, and then projected prospectively using the ultimate rates of the scales for all years
	Disabled: 2006 central rates from the RP-2014 Annuitant Mortality Tables for males and females projected to 2018 using the MP-2017 projection scales, and then projected prospectively using the ultimate rates of the scales for all years
* Plans that are heavily weighted with retiree liabilities use an amortization period based on the expected remaining lifetime of the participants	

The long-term expected rate of return on pension plan investments was determined using a building block method in which best-estimate ranges of expected future real rates of return (expected returns, net of pension plan investment expense and inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighing the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. Best estimates of arithmetic nominal rates of return for each major asset class included in the Fund's target asset allocation as of December 31, 2021 are summarized in the following table:

NOTE 6: PENSION OBLIGATIONS (Continued)

Volunteer Firefighters Pension Plan (Continued)

Actuarial Assumptions (Continued)

Asset Class	Target Allocation	Long-Term Expected Rate of Return
Global Equity	39.00%	8.23%
Equity Long/Short	8.00%	6.87%
Private Markets	26.00%	10.63%
Fixed Income - Rates	10.00%	4.00%
Absolute Return	10.00%	5.60%
Fixed Income - Credit	5.00%	5.25%
Cash	2.00%	2.32%
Total	**100.00%**	

Discount Rate

Projected benefit payments are required to be discounted to their actuarial present values using a Single Discount Rate that reflects (1) a long-term expected rate of return on pension plan investments (to the extent that the plan's fiduciary net position is projected to be sufficient to pay benefits) and (2) tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating as of the measurement date (to the extent that the plan's projected fiduciary net position is not sufficient to pay benefits).

For the purpose of this valuation, the long-term expected rate of return on pension plan investments is 7.00%; the municipal bond rate is 1.84% (based on the weekly rate closest to but not later than the measurement date of the "state & local bonds" rate from Federal Reserve statistical release (H.15)); and the resulting Single Discount Rate is 7.00%.

Sensitivity of the District's Net Pension Liability to Changes in the Discount Rate

Regarding the sensitivity of the net pension liability/(asset) to changes in the Single Discount Rate, the following presents the plan's net pension liability/(asset), calculated using a Single Discount Rate of 7.00%, as well as what the plan's net pension liability/(asset) would be if it were calculated using a Single Discount Rate that is one percent lower or one percent higher:

	1% Decrease (6.0%)	Current Discount Rate (7.0%)	1% Increase (8.0%)
Net pension asset (liability)	$ (433,555)	$ 119,646	$ 576,232

NOTE 6: PENSION OBLIGATIONS (Continued)

Volunteer Firefighters Pension Plan (Continued)

Pension Plan Fiduciary Net Position

Detailed information about the pension plan's fiduciary net position is available in the separately issued FPPA financial report.

Changes in net pension liability for the District's agent multiple-employer plan is listed below:

Total Pension Liability	2022
Service cost	$ 43,461
Interest	305,880
Changes of benefit terms	-
Differences between expected and actual experience	-
Changes of assumptions	-
Benefit payments	(280,159)
Net changes in total pension liability	69,182
Total Pension Liability - beginning	4,486,060
Total Pension Liability - ending (a)	$ 4,555,242
Plan Fiduciary Net Position	
Contributions - employer	$ 75,000
Contributions - State of Colorado (discretionary)	81,000
Net investment Income	617,973
Benefit payments,including refunds of employee contributions	(280,159)
Administrative expense	(13,921)
Other	-
Net change in plan fiduciarty net position	479,893
Plan fiduciary net position - beginning	4,194,995
Plan fiduciary net position - ending(b)	$ 4,674,888
District's net pension liability - ending (a)-(b)	$ (119,646)

Membership

As of the December 31, 2020 measurement date, pension plan membership consisted of the following:

Retirees and Beneficiaries	34
Inactive, Nonretired Members	14
Active Members	24
Total	**72**

NOTE 7: FUND BALANCE RESERVATIONS/APPROPRIATIONS

Emergency Reserve

On November 3, 1992, the voters of Colorado approved Amendment 1, commonly known as the TABOR Amendment, which adds a new Section 20 to Article X of the Colorado Constitution. TABOR contains tax, spending, revenue and debt limitations, which apply to the State of Colorado, all local governments, and special districts.

The District's financial activity for the year ended December 31, 2022 will provide the basis for calculation of future limitations adjusted for allowable increases tied to inflation and local growth. Subsequent to December 31, 2022, revenue in excess of the District's "spending limit" must be refunded unless voters approve the retention of such excess revenue. TABOR generally requires voter approval for any new tax, tax increases, and new debt.

At a November 4, 1997 election, the electors of the District authorized the District to collect, retain and expend the full amount of the revenues from all sources during 1997, as well as the full amount of all revenues generated by all sources for each subsequent year. This election authorized the spending of such revenues in each year without limitation under Article X, Section 20 of the Colorado Constitution.

TABOR is extremely complex and subject to interpretation. Ultimate implementation may depend upon litigation and legislative guidance.

The Article requires an emergency reserve be set aside for 2022 in the amount of 3% or more of its fiscal year spending. At December 31, 2022, the District has reserved the following for emergencies:

General Fund	$150,000

The District believes it is in compliance with the provisions of the TABOR Amendment.

Other Restricted Equity

The District has restricted equity related to collected impact fees and for future debt service on the loan described in Note 5. Restricted equity is comprised of the following:

TABOR Emergency	$150,000
Impact Fees	389,815
Total Restricted Equity	$539,815

Committed Fund Balance

Through the adoption of the 2022 fiscal year budget, the Board has committed the following resources:

Major Incident Reserve	$ 100,000
Down Payment Assistance	80,000
Subsequent Year's Appropriation	521,021
Operating Reserve	1,421,189
Total Committed Fund Balance	$2,122,210

NOTE 8: RISK MANAGEMENT

The District is exposed to various risks of loss related to torts; theft of, damage to, and destruction of assets; errors and omissions; injuries to firemen; and natural disasters. The District purchases commercial insurance for all risks of loss. Settled claims have not exceeded this insurance coverage in any of the past three fiscal years.

NOTE 9: COMMITMENTS AND CONTINGENCIES

In September of 2020, the District entered into a commitment for the design, development and construction administration of a new facilities in the amount of $1,013,516. As of December 31, 2022, $499,521 of this amount had been invoiced, leaving an additional $413,995 committed.

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Required Supplementary Information
Pension Schedules(Unaudited)

CRESTED BUTTE FIRE PROTECTION DISTRICT

SCHEDULE OF THE DISTRICT'S PROPORTIONATE SHARE OF THE NET PENSION ASSET (LIABILITY)
FPPA Pension Plan
Last 10 Fiscal Years[1]

Fiscal Year	District's proportion of the net pension asset (liability)	District's proportionate share of the net pension asset (liability)	District's covered payroll	District's proportionate share of the net pension asset (liability) as a proportion of covered payroll	Plan fiduciary net position as a percentage of the total pension liability
12/31/2022	0.1672062%	$ 906,147	$1,430,175	63.36%	116.16%
12/31/2021	0.1631845%	$ 354,274	$1,310,713	27.03%	106.72%
12/31/2020	0.1695413%	$ 95,886	$1,249,575	7.67%	101.90%
12/31/2019	0.1294212%	$ (35,044)	$1,211,113	-2.89%	95.23%
12/31/2018	0.1044421%	$ 143,194	$ 644,588	22.21%	106.34%
12/31/2017	0.1113608%	$ (40,239)	$ 569,925	-7.06%	98.21%
12/31/2016	0.0968831%	$ 1,708	$ 469,663	0.36%	100.10%
12/31/2015	0.0479253%	$ 54,087	$ 215,525	25.10%	106.83%
12/31/2014	0.0086331%	$ 7,720	$ 37,500	20.59%	105.83%

Note: All amounts are as of plan calculation dates which are one fiscal year prior to the date shown.

[1] - Additional years will be added to this schedule as they become available.

See the accompanying Independent Auditors' Report.

CRESTED BUTTE FIRE PROTECTION DISTRICT

SCHEDULE OF DISTRICT CONTRIBUTIONS
FPPA Pension Plan
Last 10 Fiscal Years[(1)]

Fiscal Year	Contractually required contributions	Actual contributions	Contribution deficiency (excess)	District's covered payroll	as a percentage of covered payroll
12/31/2022	$ 114,414	$ 114,414	$ -	$ 1,430,175	8.00%
12/31/2021	$ 104,857	$ 104,857	$ -	$ 1,310,713	8.00%
12/31/2020	$ 99,966	$ 99,966	$ -	$ 1,249,575	8.00%
12/31/2019	$ 96,889	$ 96,889	$ -	$ 1,211,113	8.00%
12/31/2018	$ 51,567	$ 51,567	$ -	$ 644,588	8.00%
12/31/2017	$ 45,594	$ 45,594	$ -	$ 569,925	8.00%
12/31/2016	$ 37,573	$ 37,573	$ -	$ 469,663	8.00%
12/31/2015	$ 17,242	$ 17,242	$ -	$ 215,525	8.00%
12/31/2014	$ 3,000	$ 3,000	$ -	$ 37,500	8.00%

Note: All amounts are as of plan calculation dates which are one fiscal year prior to the date shown.

(1) - Additional years will be added to this schedule as they become available.

See the accompanying Independent Auditors' Report.

CRESTED BUTTE FIRE PROTECTION DISTRICT

SCHEDULE OF CHANGES IN THE DISTRICT'S NET PENSION LIABILITY
Volunteer Pension Plan
Last 10 Fiscal Years[(1)]

	12/31/2022	12/31/2021	12/31/2020	12/31/2019
Total Pension Liability				
Service cost	$ 43,461	$ 33,703	$ 33,703	$ 36,071
Interest	305,880	246,437	242,936	245,035
Changes of benefit terms	-	628,163	-	-
Differences between expected and actual experience	-	199,043	-	(43,379)
Changes of assumptions	-	-	-	162,611
Benefit payments	(280,159)	(246,343)	(207,546)	(184,265)
Net changes in total pension liability	69,182	861,003	69,093	216,073
Total Pension Liability - beginning	4,486,060	3,625,057	3,555,964	3,339,891
Total Pension Liability - ending (a)	$ 4,555,242	$ 4,486,060	$ 3,625,057	$ 3,555,964
Plan Fiduciary Net Position				
Contributions - employer	$ 75,000	$ 75,000	$ 50,002	$ 193,563
Contributions - state	81,000	40,500	-	40,500
Net investment Income	617,973	495,306	494,869	1,588
Benefit payments, including refunds of employee contributions	(280,159)	(246,343)	(207,546)	(184,265)
Administrative expense	(13,921)	(11,066)	(16,647)	(13,551)
Other	-	-	-	-
Net change in plan fiduciary net position	479,893	353,397	320,678	37,835
Plan fiduciary net position - beginning	4,194,995	3,841,598	3,520,920	3,483,085
Plan fiduciary net position - ending(b)	$ 4,674,888	$ 4,194,995	$ 3,841,598	$ 3,520,920
District's net pension liability - ending (a)-(b)	$ (119,646)	$ 291,065	$ (216,541)	$ 35,044
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	102.63%	93.51%	105.97%	99.01%

Note: For 12/31/21 (12/31/20 measurement period), the District modified the long-term expected rate of return, mortality assumptions, and increased the monthly retirement benefit from $680 to $800.
All amounts are for the measurement period one year prior to the date shown.

(1) - Additional years will be added to this schedule as they become available.

See the accompanying Independent Auditors' Report.

12/31/2018	12/31/2017	12/31/2016	12/31/2015
$ 36,071	$ 42,490	$ 42,490	$ 41,350
237,820	229,811	221,115	212,260
-	-	-	-
-	(57,047)	-	4,300
-	56,245	-	-
(171,360)	(152,092)	(143,402)	(137,491)
102,531	119,407	120,203	120,419
3,237,360	3,117,953	2,997,750	2,877,331
$ 3,339,891	$ 3,237,360	$ 3,117,953	$ 2,997,750
$ -	$ 142,731	$ 145,947	$ 144,958
40,500	40,500	40,500	40,500
454,658	158,553	51,695	178,088
(171,360)	(152,092)	(143,402)	(137,491)
(14,327)	(4,968)	(6,642)	(4,519)
-	-	-	-
309,471	184,724	88,098	221,536
3,173,614	2,988,890	2,900,792	2,679,256
$ 3,483,085	$ 3,173,614	$ 2,988,890	$ 2,900,792
$ (143,194)	$ 63,746	$ 129,063	$ 651,341
104.29%	98.03%	95.86%	96.77%

CRESTED BUTTE FIRE PROTECTION DISTRICT

SCHEDULE OF THE DISTRICT'S NET PENSION LIABILITY AND RELATED RATIOS
Volunteer Pension Plan
Last 10 Fiscal Years (1)

Fiscal Year Ended	Total Pension Liability	Plan's Fiduciary Net Position	Net Pension Liability	Plan's Fiduciary Net Position as Percent of Total Pension Liability	Covered Payroll	Net Pension Liability as a Percent of Covered Payroll
12/31/2022	$ 4,555,242	$ 4,674,888	$ (119,646)	102.63%	$ -	N/A
12/31/2021	$ 4,486,060	$ 4,194,995	$ 291,065	93.51%	$ -	N/A
12/31/2020	$ 3,625,057	$ 3,841,598	$ (216,541)	105.97%	$ -	N/A
12/31/2019	$ 3,555,964	$ 3,520,920	$ 35,044	99.01%	$ -	N/A
12/31/2018	$ 3,339,891	$ 3,483,085	$ (143,194)	104.29%	$ -	N/A
12/31/2017	$ 3,237,360	$ 3,173,614	$ 63,746	98.03%	$ -	N/A
12/31/2016	$ 3,117,953	$ 2,988,890	$ 129,063	95.86%	$ -	N/A
12/31/2015	$ 2,997,750	$ 2,900,792	$ 96,958	96.77%	$ -	N/A
12/31/2014	$ 2,877,331	$ 2,679,256	$ 198,075	93.12%	$ -	N/A

Note: For 12/31/21 (12/31/20 measurement period), the District modified the long-term expected rate of return, mortality assumptions, and increased the monthly retirement benefit from $680 to $800.
All amounts are for the measurement period one year prior to the date shown.

(1) - Additional years will be added to this schedule as they become available.

See the accompanying Independent Auditors' Report.

CRESTED BUTTE FIRE PROTECTION DISTRICT

SCHEDULE OF ACTUARIAL DETERMINED AND ACTUAL CONTRIBUTIONS
Volunteer Pension Plan
Last 10 Fiscal Years(1)

Fiscal Year Ended	Actuarially determined contributions	Actual contributions	Contribution deficiency (excess)	District's covered payroll	Contributions as a percentage of covered payroll
12/31/2022	$ 100,983	$ 156,000	$ (55,017)	$ -	N/A
12/31/2021	$ 100,983	$ 115,500	$ (14,517)	$ -	N/A
12/31/2020	$ 19,697	$ 50,002	$ (30,305)	$ -	N/A
12/31/2019	$ 19,697	$ 234,063	$ (214,366)	$ -	N/A
12/31/2018	$ 43,012	$ 40,500	$ 2,512	$ -	N/A
12/31/2017	$ 70,224	$ 183,231	$ (113,007)	$ -	N/A
12/31/2016	$ 70,224	$ 186,447	$ (116,223)	$ -	N/A
12/31/2015	$ 70,224	$ 185,458	$ (115,234)	$ -	N/A

Note: See Note 4 of the Basic Financial Statements for significant methods and assumptions used in calculating the actuarially determined calculations.
For 12/31/21 (12/31/20 measurement period), the District modified the long-term expected rate of return, mortality assumptions, and increased the monthly retirement benefit from $680 to $800.
All amounts are for the measurement period one year prior to the date shown.

(1) - Additional years will be added to this schedule as they become available.

See the accompanying Independent Auditors' Report.

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Required Supplementary Information

CRESTED BUTTE FIRE PROTECTION DISTRICT

BUDGETARY COMPARISON SCHEDULE
General Fund
FOR THE YEAR ENDED DECEMBER 31, 2022
With Comparative Totals for the Year Ended December 31, 2021

	2022			
	Original & Final Budget	Actual	Variance With Final Budget	2021 Actual
REVENUES				
Taxes				
Property Taxes	$ 3,275,578	$ 3,261,678	$ (13,900)	$ 2,886,304
Specific Ownership Taxes	130,000	211,653	81,653	205,671
Total Tax Revenue	3,405,578	3,473,331	67,753	3,091,975
Intergovernmental Revenues				
State Grants	-	-	-	37,374
Other Intergovernmental	25,000	41,840	16,840	28,612
Total Intergovernmental Revenue	25,000	41,840	16,840	65,986
Charges for Services				
Rents	69,500	73,006	3,506	59,574
Other Charges for Services	333,280	969,788	636,508	498,543
Total Charges for Services	402,780	1,042,794	640,014	558,117
Investment Earnings	15,000	61,567	46,567	7,837
Other Revenues				
Donations	-	1,000	1,000	8,400
Sale of Capital Assets	3,000	-	(3,000)	4,100
Other Miscellaneous Revenue	-	20	20	15
Total Other Revenue	3,000	1,020	(1,980)	12,515
TOTAL REVENUES	3,851,358	4,620,552	769,194	3,736,430

See accompanying Independent Auditors' Report.

(Continued)

CRESTED BUTTE FIRE PROTECTION DISTRICT

BUDGETARY COMPARISON SCHEDULE
General Fund
FOR THE YEAR ENDED DECEMBER 31, 2022
With Comparative Totals for the Year Ended December 31, 2021

	2022			
	Original & Final Budget	Actual	Variance With Final Budget	2021 Actual
(Continued)				
EXPENDITURES				
Administration				
Personnel Services	774,166	731,403	42,763	572,303
Insurance	30,000	33,309	(3,309)	27,464
Professional Fees	77,800	80,675	(2,875)	119,515
Repairs and Maintenance	43,500	24,795	18,705	36,487
Supplies and Office	105,820	74,686	31,134	80,532
Telephone and Utilities	56,500	57,395	(895)	44,040
Travel and Training	61,500	46,364	15,136	33,317
Volunteer Pension Contribution	75,000	75,000	-	75,000
Other Expenses	127,700	125,331	2,369	120,628
Total General Government	1,351,986	1,248,958	103,028	1,109,286
Operations				
Personnel Services	2,045,667	2,035,955	9,712	1,678,739
Fuel and Automotive	40,000	43,840	(3,840)	31,959
Professional Fees	79,001	71,501	7,500	79,477
Repairs and Maintenance	46,000	47,626	(1,626)	48,291
Supplies	144,500	145,369	(869)	122,543
Telephone and Utilities	12,600	12,952	(352)	10,611
Travel and Training	101,800	68,033	33,767	71,354
Other Expenses	11,600	10,774	826	4,195
Total Public Safety	2,481,168	2,436,050	45,118	2,047,169
Capital Outlay			-	
Public Safety Capital Outlay	145,000	154,659	(9,659)	837,893
Debt Service				
Principal	61,626	190,915	(129,289)	61,626
Interest	-	2,214	(2,214)	-
Total Debt Service	61,626	193,129	(131,503)	61,626
TOTAL EXPENDITURES	6,379,574	4,032,796	2,346,778	4,055,974
REVENUES IN EXCESS (DEFICIENCY) OF EXPEND	(2,528,216)	587,756	3,115,972	(319,544)
OTHER FINANCING SOURCES (USES)				
Transfers In	-	249,453	(249,453)	-
NET CHANGE IN FUND BALANCE - BUDGET BASIS	$ (2,528,216)	837,209	$ 2,866,519	(319,544)
Budget to GAAP Basis Reconciliation				
Debt Proceeds		125,875		400,000
Capital Outlay		(125,875)		(400,000)
NET CHANGE IN FUND BALANCE - GAAP BASIS		837,209		(319,544)
FUND BALANCE, BEGINNING		2,242,433		2,561,977
FUND BALANCE, ENDING		$ 3,079,642		$ 2,242,433

See accompanying Independent Auditors' Report.

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Other Supplementary Information

CRESTED BUTTE FIRE PROTECTION DISTRICT

BUDGETARY COMPARISON SCHEDULE
Capital Reserve Project Fund
FOR THE YEAR ENDED DECEMBER 31, 2022

	2022		
	Original & Final Budget	Actual	Variance With Final Budget
REVENUES			
Investment Earnings	$ -	$ 48,661	$ 48,661
EXPENDITURES			
Professional Fees	-	244,890	(244,890)
Other Expenses	-	251	(251)
Total General Government	-	245,141	(245,141)
Capital Outlay			
Public Safety Capital Outlay	8,900,000	2,286,334	6,613,666
TOTAL EXPENDITURES	8,900,000	2,531,475	6,368,525
REVENUES IN EXCESS (DEFICIENCY) OF EXPENDITURES	(8,900,000)	(2,482,814)	6,417,186
OTHER FINANCING SOURCES (USES)			
Debt Proceeds	(9,000,000)	32,123,048	(41,123,048)
Transfers (Out)	-	(249,453)	249,453
TOTAL OTHER FINANCING SOURCES (USES)	(9,000,000)	31,873,595	(40,873,595)
NET CHANGE IN FUND BALANCE - BUDGET BASIS	$ (17,900,000)	29,390,781	$ (34,456,409)
FUND BALANCE, BEGINNING		-	
FUND BALANCE, ENDING		$ 29,390,781	

See accompanying Independent Auditors' Report.

CRESTED BUTTE FIRE PROTECTION DISTRICT

BUDGETARY COMPARISON SCHEDULE
Bond Redemption Fund
FOR THE YEAR ENDED DECEMBER 31, 2022

	2022		
	Original & Final Budget	Actual	Variance With Final Budget
REVENUES			
Property Taxes	$ 1,796,667	$ 1,789,629	$ (7,038)
Specific Ownership Taxes	-	108,820	108,820
Total Tax Revenue	1,796,667	1,898,449	101,782
Investment Earnings	4,190	14,137	9,947
TOTAL REVENUES	1,800,857	1,912,586	111,729
EXPENDITURES			
Other Expenses	-	53,892	(53,892)
Capital Outlay			
Principal	765,000	765,000	-
Interest	846,667	916,476	(69,809)
TOTAL EXPENDITURES	1,611,667	1,735,368	(123,701)
NET CHANGE IN FUND BALANCE - BU	$ 189,190	177,218	$ (11,972)
FUND BALANCE, BEGINNING		-	
FUND BALANCE, ENDING		$ 177,218	

See accompanying Independent Auditors' Report.

2023 June EMS & Fire Chief Board Report

As the summer season is in full effect, we continue to see an increase in calls for service year to date. June was a bit slower than previous years however this provided time for additional training opportunities. Several of our members attended the Colorado Firefighter College hosted by Gunnison Fire that brought well over 100 + firefighters to their training grounds for lecture and hands on training evolutions. Classes took place over 3 days. Some other highlights in June included the Gunnison Valley Health Foundation Health fair. A big thank you to the staff and volunteers who helped with this event where we drew 634 community members over 3 days. Some of the monies received during this event is donated to a fund dedicated to the CBFPD for education and is available by scholarship requests. Additionally, we took delivery of our new command box that was retrofitted into D8. Thanks to Chief Duke who made the long road trip to the east coast for final inspection and then drove back to Colorado for the final touches. Below is a picture of the command vehicle.

We often hear about mass shootings happening in society and they seem to be more frequent in nature. While we have had TEMS (Tactical EMS) in the north end of the valley for numerous years, we have begun the process of forming a county wide special response team that includes all the law enforcement agencies as well as Gunnison Paramedics. This provides the opportunity for quick response on either end of the valley. As a SRT (special response team), we will support each other on missions and may be utilized anywhere in the county by request. Many of the requirements will reflect what we have been doing in our district and we look forward to supporting this effort.

The Firefighter/Paramedic application process has closed. In total, we received 5 applications and have chosen to interview 3 candidates. Interviews will be conducted this month and I will be able to provide an update at the next board meeting regarding the open position. 2 candidates are currently in Colorado and out of district while one is moving to the state in the next couple months.

Lastly, many thanks to the volunteers, staff, family members, friends, and explorers who helped make the 49th July 4th pancake breakfast a great success. We were able to showcase to our community what it means to have teamwork, dedication, and pride. The fireworks show went off with a problem and our members helped support it by having Brush 1 on site with a crew and 1 member who is working on his fireworks technician certification. No major events happened during this time.

Personnel/Volunteers

Staffing remains an issue however we are managing. Thanks to those who are helping backfill the shifts and many thanks to the part timers and volunteers stepping up to help with coverage.

1 employee has been off from work for 1 month but will be returning shortly. 1 employee is scheduled to have a surgery in August and we wish for a speedy recovery. 1 employee has stepped down from their duties as EMS training Lieutenant to focus on firefighter/paramedic. As such, I will be managing the EMS training duties until a qualified replacement is found for those duties.

Training

We are finalizing a deal for a local house to obtain as an acquired structure. 14 Castle road is set to be demolished for a new project and the home owner has graciously offered us the opportunity to utilize the house for training. Once the agreement is signed, we will have the property until August 15th. While the house would require too much work to perform live fire evolutions, it will provide a great opportunity for many other applications. All fire trainings will be conducted at the property until the end date of the agreement. These chances are invaluable.

I'm excited to announce that we have signed an educational agreement to provide critical care education to all our paramedics over the next year that will end with an in-person 4 day course so that they are prepared to test for critical care certification. This is an effort to bring all our paramedics up to the Critical Care level, therefore increasing our level of service amongst the paramedics.

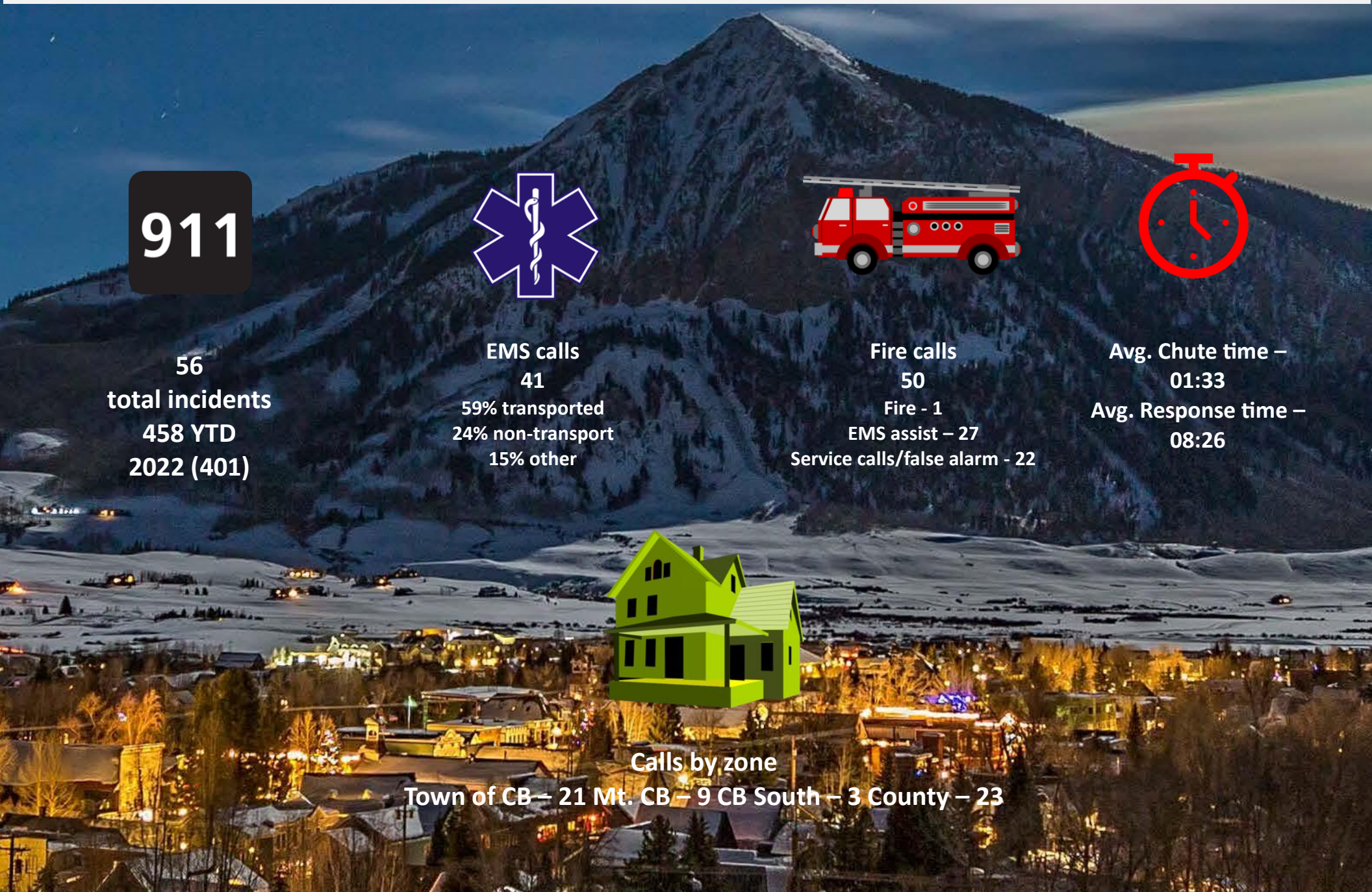
Vehicles

Sadly, no update on Engine 3. However, I was able to track down a truck that will closer mirror our specification for the new quint. Take a look at the picture below. I'm pleased to say I spoke with the Chief at Big White Fire Dept. in British Columbia who took delivery of their quint viper truck in 2021 and is very pleased with the performance minus a couple little hiccups which is not unusual. Their region provides services to a ski resort town and is similar in nature to our landscape so hearing the pros and cons have been quite beneficial. Overall, it appears we are heading in the right direction with this design.

Maintenance

Station 1 Bay 1 spring broke and required repair work. The door/bay remained out of service for just a few days and has since been repaired. No other major maintenance projects to report.

MONTH IN REVIEW:
JUNE 2023



911

56
total incidents
458 YTD
2022 (401)

EMS calls
41
59% transported
24% non-transport
15% other

Fire calls
50
Fire - 1
EMS assist – 27
Service calls/false alarm - 22

Avg. Chute time – 01:33
Avg. Response time – 08:26

Calls by zone
Town of CB – 21 Mt. CB – 9 CB South – 3 County – 23

CRESTED BUTTE FIRE PROTECTION DISTRICT

306 MAROON AVENUE
P.O. BOX 1009
CRESTED BUTTE, CO 81224
(970) 349-5333 FAX: (970) 349-3420
WEBSITE: WWW.CBFPD.ORG

July 2, 2023

CBFPD Board of Directors (BOD)

RE: Fire Prevention Division work summary for June 2023

Dear Board of Directors,

Addressed are some of the larger projects in the plan development and review stages:

Major Projects: (planning, fire requirements & multiple meetings) ON GOING

Mount Crested Butte	Crested Butte	County
-Prospect II-on going	-Academy Place Multifamily	-County Whetstone Housing (240 units)
-North Village-on going	-Mineral Point	-New subdivision at Cement Creek & Hwy, 135 (75 homes)
-Honey Rock Ridge	-New Town WWTP	-changing commercial district in CBS to One-Way traffic
-CB Ridge (old Nevada Ridge)	-Fire Campus	-Solar Farm on Hwy 135
-Bear Crossing	-48 affordable housing units	-Clark commercial expansion-CBS

Plan Reviews/Letters: completed in June- **(19 total)**

Mount Crested Butte	Crested Butte	County	
-CB Ridge	-Teocalli	-Barbra Place	-Red Mtn. Ranch Rd.
-Hunter Ridge	-Butte Ave.	-Silver Sage	-S. Avion Drive x 2
-Paradise Road	-Elk Ave.	-White Stallion	-Marmot Way
-Prospect Drive	-Teocalli	-Foxtrot Trail	-Vista Court
	-Elk Ave.	-North Avion Dr.	

Inspections & Meetings: **43**

Mount Crested Butte	Crested Butte	County
4	**26**	**13**

Company Level Annual Life Safety Inspections: **1** performed in the month of June

Fire Prevention Division summary: The Fire Prevention Division currently has 22 invoices out waiting for their plan review payment. Upon receipt of payment, we will start the process to perform their plan review.

Updates & Enforcement issues:

1. FYI, new hood plan submittals are forth coming for the Bruhaus, the Princess, the Forest Queen (being lifted in order to excavate a new basement) and the Avalanche Bar & Grill.
2. The Dogwood has removed all of the cooking appliances and will only be serving cold food.

Action request to the Board of Directors:

-none as of this packet submittal

CRESTED BUTTE FIRE PROTECTION DISTRICT
Chief Executive's Report

July 11th, 2023

1. Consent Agenda
a) June 20th Regular Meeting Minutes
b) Monthly Financial Reports
c) 2022 Audit

2. Chief Executive's Comments:

The July crowds have arrived and the wildflowers are in bloom. On July 4th we conducted our 49th Annual Pancake Breakfast, participated in Elk Avenue parade, conducted our traditional water fight at 1st and Beckwith and ended our day supporting the Mt. Crested Butte fireworks. My thanks to our entire team, particularly the high schoolers of Explorer Post 911, for all of the hard work and to our leadership team for making sure the events were safe, fun and productive. Having done a variety of odd jobs during the events, I was excited to hear the support and well wishes from our community and visitors.

We have also completed the first half of 2023 and remain on budget for our operational and capital expenses. So far tax collections are on track for the year. Plan review fees, ambulances fees, rental income and interest income are all tracking better than expected. We do not, however, expect to use much of our state ambulance grant this year as the vehicle delivery will be pushed back to 2024. On the expense side we are right on target with payroll and with some limited exceptions for vehicle repairs, rent and service contracts we are looking good. Interest income is doing especially well this year with our investment pool income making over 5% so far this year. Our 2022 audit was also recently finalized and we are pleased to present that in the packet as well. The audit did not recommend any changes to our financial policies and we are now also tracking our general obligation bond funds.

Chief Weisbaum will be unable to join us in person this month as he has some conflicting medical appointments in Denver. His written report is attached and I will do my best to answer any questions. The paramedic hiring process continues and we are working through some staffing challenges as employees are absent at various times this summer. Engine 3 repairs continue to drag on, however, D-8 has returned with the new command module and the Quint exploration committee is moving forward with their work. New dispatch equipment has also been installed at the 9-1-1 center and we are working through updated radio procedures and programming. Fire Marshal Ems will also present his report as we have moved that report up on the agenda to allow the fire prevention members to leave once their report is complete. We also have some street design conversation that will occur in new business.

I am not anticipating any public comments this month. In old business, however, we have some major approvals related to the new station project. We have received an updated cost estimate from FCI that comes in at $21.4M as of the end of June. FCI is further projecting a decent amount of cost inflation throughout the project with final price tag of $23.7M. We have been previously carrying a budget of $22M inclusive of the EIAF Grant. Considering we are within budget on the project right now and that we might be short funds based on the inflation situation moving forward, Todd and I have done an analysis of anticipated investment income, current contingency allocations, potential general fund transfers in 2024 & 2025, and delay or financing of the housing components of the project. Based on these options we believe we can cover a shortfall through one or more those mechanisms if inflation occurs as badly as predicted. This is balanced against the time and expense it would take to further reduce and redesign the buildings, likely putting us into a more unpredictable inflation situation that would come with the delay. As a result, Todd and I will walk you through the estimate and the budget numbers and we will recommend proceeding forward with the current design and updated budget despite a potential shortfall in funds of up to $500,000.

Also on the list for review and approval this month are the updated schematic design (SD) packages

for both buildings. These are unchanged from last month and mostly reflect recent utilities updates as well as the completion of the SAR building with a training room and solar panels now that the grant has been awarded. Todd and are are comfortable accepting the SD package for the fire station and have no concerns with the SAR Building, however, we may receive one or two last minute comments from SAR that will need to be considered. Either way, we are comfortable proceeding forward into the design development phase.

In other fire station news, we are currently doing some test drilling this week to determine the feasibility of a geothermal heating system for both buildings. While FCI has priced these as very expensive options, we are excited to get more information on feasibility and cost as there is currently a 30% tax credit available and we would likely save a significant amount on heating costs over time if geothermal is viable.

The final item in old business will be review and approval of the purchase and development agreement for the 2 Larkspur lots. Our attorney John Chmil has been working with both myself and the County the finalize the terms of the agreements. We believe the attached are the final versions and would recommend the board review and approve the purchase and development agreement to bring the parcels under contract. Once under contract we anticipate a closing probably shortly after the August Board Meeting. The priority for this month will be the purchase agreement, however, the deed restriction is also in the packet unchanged from last month. We will also have an additional resolution authorizing the purchase and for the Chairman to sign either this month or next.

In new business I will briefly review the recent requests we have received to weigh in on street design issues. We are currently involved in conversations with Crested Butte South and the Town of the Crested Butte. The CB South review relates to a proposed traffic plan to the CB South commercial zone. The Town of CB requests relate to ongoing work on a town-sponsored traffic and mobility plan. The documents provided are mostly for reference, however, suffice it to say the basis of our approach to streets is contained in the Section 503 of the International Fire Code. While that code specifies minimum requirements for access it does not address a wide range of evolving street design elements such as street connections, traffic calming, parking, intersection designs and one-way configurations. As such we have looked to the additional publications provided in the packet to develop opinions on these issues. As such we wanted the board to be aware of the basis of comments that will be made to these upcoming projects and other issues such as the potential opening of the Butte Ave. bridge to traffic in Crested Butte. Furthermore, while I suspect it will be an unpopular opinion to some neighbors, we will likely take a strong stand that a connected Butte Ave is important to public safety response to all areas of Crested Butte northwest of Coal Creek, especially as we move to our new location. We will be happy to take additional comments.

In terms of updates not on the agenda, we are still enrolled in the Lazy K lottery for a 3-bedroom unit. The lottery has been postponed to 7/27. I have also made contact with Jeff Dyar from Bayfield to once again help facilitate our Strategic Planning session.

3. Action Items

a) Approve consent agenda & audit
b) Review, discuss and approve updated fire station budget
c) Review and approve updated Schematic Design documents
d) Review and approve Larkspur Purchase and associated documents

PROJECT:

EMERGENCY SERVICES CAMPUS
CRESTED BUTTE FIRE PROTECTION DISTRICT
CRESTED BUTTE, CO

PREPARED FOR:
CBFPD
CRESTED BUTTE, CO

SCHEMATIC ESTIMATE R4
June 30, 2023

PREPARED BY: FCI CONSTRUCTORS, INC.

FCI Constructors, Inc.

Date: 6/30/2023
Project:
EMERGENCY SERVICES CAMPUS

CRESTED BUTTE, CO
SCHEMATIC ESTIMATE R4

DESCRIPTION	HQ BUILDING NEW CONSTR. 22,650 TOTAL SF / TOTAL COST	HQ BUILDING NEW CONSTR. 22,650 TOTAL SF / COST/SF	SAR BUILDING NEW CONSTR. 5,942 TOTAL SF / TOTAL COST	SAR BUILDING NEW CONSTR. 5,942 TOTAL SF / COST/SF	SITEWORK TOTAL COST	TOTAL PROJECT - SCHEMATIC ESTIMATE R4 TOTAL COST	TOTAL PROJECT - SCHEMATIC ESTIMATE R3 TOTAL COST	*COMPARISON TO SCHEMATIC ESTIMATE R3*	NOTES
010000 GENERAL REQUIREMENTS	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
030000 CONCRETE	$ 798,254	$ 35.24	$ 295,581	$ 49.74	$ -	$ 1,093,835	$ 1,090,235	*$ 3,600*	
040000 MASONRY	$ 742,607	$ 32.79	$ -	$ -	$ -	$ 742,607	$ 742,607	*$ 0*	
050000 METALS	$ 1,441,582	$ 63.65	$ 29,213	$ 4.92	$ -	$ 1,470,795	$ 1,470,795	*$ (0)*	
060000 WOOD & PLASTICS	$ 329,152	$ 14.53	$ 38,243	$ 6.44	$ -	$ 367,395	$ 367,395	*$ -*	
070000 THERMAL & MOISTURE PROTECTION	$ 1,487,940	$ 65.69	$ 11,563	$ 1.95	$ -	$ 1,499,504	$ 1,499,504	*$ (0)*	
080000 DOORS & WINDOWS	$ 480,816	$ 21.23	$ 202,055	$ 34.00	$ -	$ 682,871	$ 682,871	*$ (0)*	
090000 FINISHES	$ 1,982,246	$ 87.52	$ 249,541	$ 42.00	$ -	$ 2,231,786	$ 2,231,789	*$ (3)*	
100000 SPECIALTIES	$ 137,996	$ 6.09	$ 71,892	$ 12.10	$ -	$ 209,888	$ 209,888	*$ (0)*	
110000 EQUIPMENT	$ 102,726	$ 4.54	$ 8,787	$ 1.48	$ -	$ 111,513	$ 108,421	*$ 3,092*	
120000 FURNISHINGS	$ 57,421	$ 2.54	$ -	$ -	$ -	$ 57,421	$ 57,421	*$ 0*	
130000 SPECIAL CONSTRUCTION	$ -	$ -	$ 572,500	$ 96.35	$ -	$ 572,500	$ 572,500	*$ -*	
140000 CONVEYING SYSTEMS	$ 115,000	$ 5.08	$ -	$ -	$ -	$ 115,000	$ 115,000	*$ -*	
210000 FIRE PROTECTION	$ 272,435	$ 12.03	$ 100,224	$ 16.87	$ -	$ 372,659	$ 239,493	*$ 133,166*	
220000 PLUMBING	$ 450,350	$ 19.88	$ 159,492	$ 26.84	$ -	$ 609,842	$ 609,842	*$ -*	
230000 HVAC	$ 1,834,928	$ 81.01	$ 575,432	$ 96.84	$ -	$ 2,410,360	$ 2,410,360	*$ (1)*	
260000 ELECTRICAL	$ 1,933,178	$ 85.35	$ 643,128	$ 108.23	$ -	$ 2,576,306	$ 2,434,806	*$ 141,500*	
27/280000 LOW VOLT SYSTEMS	$ 115,000	$ 5.08	$ 35,000	$ 5.89	$ -	$ 150,000	$ 150,000	*$ -*	
310000 EARTHWORK-BUILDING	$ 298,322	$ 13.17	$ 73,263	$ 12.33	$ -	$ 371,585	$ 371,585	*$ 0*	
310000 EARTHWORK-SITE	$ -	$ -	$ -	$ -	$ 434,233	$ 434,233	$ 433,642	*$ 591*	
320000 EXTERIOR IMPROVEMENTS & UTILITIES	$ -	$ -	$ -	$ -	$ 2,131,557	$ 2,131,557	$ 1,753,645	*$ 377,912*	
SUBTOTAL - DIRECT COSTS	**$ 12,579,952**	**$ 555.41**	**$ 3,065,915**	**$ 515.97**	**$ 2,565,790**	**$ 18,211,657**	**$ 17,551,799**	***$ 659,858***	
PRECONSTRUCTION FEE	$ 20,723	$ 0.91	$ 5,050	$ 0.85	$ 4,227	$ 30,000	$ 30,000	*$ -*	LUMP SUM
GENERAL CONDITIONS	$ 238,766	$ 10.54	$ 58,191	$ 9.79	$ 48,698	$ 345,654	$ 292,301	*$ 53,353*	LUMP SUM
STAFFING	$ 683,286	$ 30.17	$ 166,527	$ 28.03	$ 139,362	$ 989,175	$ 848,220	*$ 140,955*	
ESTIMATING CONTINGENCY	$ -	$ -	$ -	$ -	$ -	$ -	$ -	*$ -*	0.00%
CONSTRUCTION CONTINGENCY	$ 405,682	$ 17.91	$ 98,870	$ 16.64	$ 82,742	$ 587,295	$ 561,669	*$ 25,626*	3.00%
BUILDERS RISK INSURANCE	$ 10,198	$ 0.45	$ 2,491	$ 0.42	$ 2,084	$ 14,773	$ 14,124	*$ 649*	
GENERAL LIABILITY INSURANCE	$ 125,630	$ 5.55	$ 30,685	$ 5.16	$ 25,670	$ 181,985	$ 173,995	*$ 7,990*	0.85%
FCI PAYMENT/PERFORMANCE BOND	$ 71,150	$ 3.14	$ 22,100	$ 3.72	$ 18,850	$ 112,100	$ 107,318	*$ 4,782*	1-YR WARRANTY
FCI CONSTRUCTION PHASE FEE	$ 636,092	$ 28.08	$ 155,242	$ 26.13	$ 129,934	$ 921,269	$ 881,074	*$ 40,195*	4.50%
TOTAL ESTIMATED CONSTRUCTION COST FEBRUARY 2023	**$ 14,771,479**	**$ 652.16**	**$ 3,605,071**	**$ 606.71**	**$ 3,017,357**	**$ 21,393,907**	**$ 20,460,497**	***$ 933,407***	
ESCALATION TO SEPTEMBER 2023 (IGMP TRADES)	10.50%		10.50%		10.50%	1.5% PER MONTH			
ESCALATION TO FEBRUARY 2024 (FGMP TRADES	12.00%		12.00%			1.0% PER MONTH			
TOTAL ESCALATION	$ 1,644,066		$ 396,378		$ 316,823	$ 2,357,266	$ 1,227,630	*$ 1,129,636*	
TOTAL W/ESCALATION	**$ 16,415,545**		**$ 4,001,449**		**$ 3,334,180**	**$ 23,751,173**	**$ 21,688,127**	***$ 2,063,046***	

CRESTED BUTTE FIRE PROTECTION DISTRICT
CRESTED BUTTE, CO
EMERGENCY SERVICES CAMPUS
ALTERNATE LOG

30-Jun-23
FCI CONSTRUCTORS, INC.
SD ALTERNATES

Item	Description	COST	ACCEPTED	Pending	REJECTED	Notes
1	CHANGE HQ SIDING TO AEP FLEX SERIES METAL	$ 68,060		$ 68,060		INCLUDED IN ESTIMATE AS RESYSTA
2	CHANGE HQ SIDING TO EQUITONE FIBER CEMENT	$ -		$ -		NEGLIGIBLE COST DIFFERENCE - INCLUDED IN ESTIMATE AS RESYSTA
3	CHANGE HQ BRICK TO STONE	$ 233,099		$ 233,099		
4	BUILD OUT SAR TRAINING ROOM	$ 126,945		$ 126,945		
5	SAR TRAINING ROOM ACCESS CONTROL & CCTV	$ 8,467		$ 8,467		
6	SAR TRAINING ROOM TELECOM CABLING	$ 8,433		$ 8,433		
7	ENCLOSE/BUILD OUT SAR VEHICLE BAY	$ 169,658	$ 169,658			INCLUDED IN BASE BID; LOW VOLT SYSTEMS N/A IN THIS AREA
8	ADD 10,000 GAL UNDERGROUND WATER STORAGE TANK FOR TRAINING BUILDING	$ 82,556	$ 82,556			INCORPORATED INTO BASE BID PER SD REPORT REV 01
9	ADD 65 KW GENERATOR FOR SAR BUILDING	$ 168,378		$ 168,378		
10	ADD ACCESS CONTROL & CCTV SYSTEMS TO HQ	$ 130,368		$ 130,368		DOES NOT INCLUDE SHELL SPACE
11	ADD ACCESS CONTROL & CCTV SYSTEMS TO SAR	$ 55,682		$ 55,682		DOES NOT INCLUDE TRAINING ROOM
12	ADD TELECOM CABLING TO HQ	$ 131,866		$ 131,866		DOES NOT INCLUDE SHELL SPACE
13	ADD TELECOM CABLING TO SAR	$ 61,680		$ 61,680		DOES NOT INCLUDE TRAINING ROOM
14	ADD PV ARRAY TO SAR BUILDING	$ 70,000	$ 70,000			ALLOWANCE - APPROXIMATELY 21KW/1,050 SF - INCORPORATED INTO BASE BID PER SD REPORT REV 01
15	ADD PV ARRAY TO HQ BUILDING	$ 250,000		$ 250,000		ALLOWANCE - APPROXIMATELY 75KW/3,750 SF
16	BUILDOUT HQ SHELL SPACE	$ 82,460		$ 82,460		434 SF - INCLUDES SHELL SPACE LOW VOLT SYSTEMS
17	DIESEL POWERED FIRE PUMP IN LIEU OF ELECTRICAL	$ 22,034		$ 22,034		LOCATED IN HQ BUILDING
18	ADD VEHICLE EXHAUST SOURCE CAPTURE TO SAR BUILDING	$ 286,135		$ 286,135		
19	GEOTHERMAL SYSTEM IN LIEU OF CURRENT MECHANICAL SYSTEM - HQ BUILDING	$ 1,620,487		$ 1,620,487		
20	GEOTHERMAL SYSTEM IN LIEU OF CURRENT MECHANICAL SYSTEM - SAR BUILDING	$ 425,090		$ 425,090		
			$ 322,214	**$ 3,679,185**	**$ -**	

CRESTED BUTTE FIRE STATION

6/30/2023

DIV 1: GENERAL CONDITIONS											
DESCRIPTION	QUANTITY	UNIT	PRICE	MATERIAL	MATERIAL TAX	PRICE	EQUIP/SUB	PRICE	LABOR	LABOR BURDEN	TOTAL
ONSITE MANAGEMENT											
PROJECT MANAGER	19	WK	$ -	$ -	$ -	$ -	$ -	$ 5,060.00	$ 96,140.00	$ -	$ 96,140.00
SUPERINTENDENT	65	WK	$ -	$ -	$ -	$ -	$ -	$ 5,500.00	$ 357,500.00	$ -	$ 357,500.00
ASSISTANT SUPER	57	WK	$ -	$ -	$ -	$ -	$ -	$ 4,136.00	$ 235,235.00	$ -	$ 235,235.00
PROJECT ENGINEER	81	WK	$ -	$ -	$ -	$ -	$ -	$ 3,696.00	$ 300,300.00	$ -	$ 300,300.00
TEMPORARY FACILITIES											
STORAGE VAN - RENT	15.0	MO	$ 225.00	$ 3,365.38	$ -	MOB IN/OUT	$ 1,500.00	$ -	$ -	$ -	$ 4,865.38
OFFICE TRAILER	15.0	MO	$ 2,000.00	$ 29,914.53	$ -	MOB IN/OUT	$ 10,000.00	$ -	$ -	$ -	$ 39,914.53
JOB SIGN	1	EA	$ 800.00	$ 800.00	$ -	$ -	$ -	$ -	$ -	$ -	$ 800.00
TEMP POWER	15.0	MO	$ 400.00	$ 5,982.91	$ -	INSTALL	$ 300.00	$ -	$ -	$ -	$ 6,282.91
CELL PHONE	15.0	MO	$ 375.00	$ 5,608.97	$ -	$ -	$ -	$ -	$ -	$ -	$ 5,608.97
OFFICE TRAILER PHONE/INTERNET	15.0	MO	$ 150.00	$ 2,243.59	$ -	INSTALL	$ 250.00	$ -	$ -	$ -	$ 2,493.59
COMPUTER/IT SERVICES	15.0	MO		$ -	$ -	$ 735.00	$ 10,993.59	$ -	$ -	$ -	$ 10,993.59
OFFICE SUPPLIES, COPIER	15.0	MO	$ 500.00	$ 7,478.63	$ -	$ -	$ -	$ -	$ -	$ -	$ 7,478.63
TEMP TOILET	15.0	MO	$ -	$ -	$ -	$ 750.00	$ 11,217.95	$ -	$ -	$ -	$ 11,217.95
TEMP WATER - POTABLE	15.0	MO	$ -	$ -	$ -	$ 200.00	$ 2,991.45	$ -	$ -	$ -	$ 2,991.45
EQUIPMENT											
PICKUP RENT	15.0	MO	$ 1,500.00	$ 22,435.90	$ -	$ 2,050.00	$ 30,662.39	$ -	$ -	$ -	$ 53,098.29
MISCELLANEOUS SMALL TOOLS	15.0	MO	$ 250.00	$ 3,739.32	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,739.32
FIRE EXTINGUISHERS	15.0	MO	$ 75.00	$ 1,121.79	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,121.79
MISCELLANEOUS											
SAFETY	15.0	MO	$ 150.00	$ 2,243.59	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,243.59
PLAN REPRODUCTION	1.0	LS	$ 7,500.00	$ 7,500.00	$ -	$ -	$ -		$ -	$ -	$ 7,500.00
OUT OF AREA											
HOME & OFFICE TRAVEL	15.0	MO	$ 500.00	$ 7,478.63	$ -	$ -	$ -	$ -	$ -	$ -	$ 7,478.63
SUBSISTENCE	65.0	WK	$ -	$ -	$ -	$ 1,125.00	$ 73,125.00	$ -	$ -	$ -	$ 73,125.00
HOUSING	15.0	MO	$ -	$ -	$ -	$ 7,000.00	$ 104,700.85	$ -	$ -	$ -	$ 104,700.85
TOTALS				$ 99,913.25	$ -		$ 245,741.24		$ 989,175.00	$ -	**$ 1,334,829**

DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL	TOTAL
030000 CONCRETE	***HQ BUILDING***					
033200 CAST-IN-PLACE CONCRETE						
FOOTING - 60" X 60" X 14"	**EA**	**19.00**				
FORM/STRIP COLUMN FOOTINGS	SF	443.00	$ 17.25	SF	$	**7,120**
SET ANCHOR BOLTS/TEMPLATES	SETS	19.00	$ 88.00	SETS	$	**1,672**
GROUT COLUMN BASE PLATES	EA	19.00	$ 75.04	EA	$	**1,426**
REBAR TO COLUMN FOOTINGS	TN	1.13	$ 3,760.00	TN	$	**4,264**
CONCRETE TO COLUMN FOOTINGS	CY	25.20	$ 352.00	CY	$	**8,870**
SUBTOTAL- COLUMN FOOTINGS					$	**23,351**
FOOTING - 84" X 84" X 16"	**EA**	**51.00**				
FORM/STRIP COLUMN FOOTINGS	SF	1,904.00	$ 17.25	SF	$	**30,649**
SET ANCHOR BOLTS/TEMPLATES	SETS	51.00	$ 88.00	SETS	$	**4,488**
GROUT COLUMN BASE PLATES	EA	51.00	$ 75.04	EA	$	**3,827**
REBAR TO COLUMN FOOTINGS	TN	6.64	$ 3,760.00	TN	$	**24,974**
CONCRETE TO COLUMN FOOTINGS	CY	147.60	$ 352.00	CY	$	**51,955**
SUBTOTAL- COLUMN FOOTINGS					$	**115,893**
WALL FOOTING - 22" X 12"						
FORM/STRIP WALL FOOTINGS	SF	1,440.00	$ 14.43	SF	$	**20,784**
SHEAR KEYWAY-WALL FOOTINGS	LF	720.00	$ 4.25	LF	$	**3,060**
REBAR TO WALL FOOTINGS	TN	2.21	$ 3,600.00	TN	$	**7,938**
CONCRETE TO WALL FOOTINGS	CY	58.80	$ 368.00	CY	$	**21,638**
SUBTOTAL- WALL FOOTINGS					$	**53,420**
COLUMN PIERS						
FORM/STRIP COLUMN PIERS	SF	966.00	$ 12.68	SF	$	**11,063**
SET ANCHOR BOLTS/TEMPLATES	SETS	46.00	$ 88.00	SETS	$	**4,048**
GROUT COLUMN BASE PLATES	EA	46.00	$ 75.04	EA	$	**3,452**
REBAR TO COLUMN PIERS	TN	2.25	$ 3,200.00	TN	$	**7,200**
CONCRETE TO COLUMN PIERS	CY	18.00	$ 340.00	CY	$	**6,120**
SUBTOTAL- COLUMN PIERS					$	**31,882**
STEM WALLS - 14" X 36"						
FORM/STRIP STEM WALLS	SF	4,285.00	$ 14.33	SF	$	**61,418**
FORM/STRIP BRICK SHELF	LF	714.00	$ 21.25	LF	$	**15,173**
REBAR TO STEM WALLS- 100#/CY	TN	6.14	$ 4,000.00	TN	$	**24,552**
POINT & PATCH STEM WALLS	SF	2,142.50	$ 1.43	SF	$	**3,071**
CONCRETE TO STEM WALLS	CY	111.60	$ 368.00	CY	$	**41,069**
SUBTOTAL- STEM WALLS					$	**145,283**
ELEVATOR PIT SLAB						
FORM/STRIP PIT SLAB EDGES	SF	34.00	$ 9.00	SF	$	**306**
SHEAR KEY-PIT SLAB	LF	34.00	$ 3.40	LF	$	**116**
WATERSTOP-BAR TYPE-PIT SLAB	LF	34.00	$ 5.65	LF	$	**192**
REBAR TO PIT SLAB	TN	0.28	$ 3,200.00	TN	$	**896**
FINISH ELEVATOR PIT SLAB	SF	70.00	$ 0.92	SF	$	**64**
CURE & PROTECT ELEVATOR PIT SLAB	SF	70.00	$ 0.50	SF	$	**35**
CONCRETE TO ELEVATOR PIT SLAB	CY	2.72	$ 340.00	CY	$	**926**
SUBTOTAL- ELEVATOR PIT SLAB					$	**2,534**

DESCRIPTION		UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL		TOTAL
030000 CONCRETE	***HQ BUILDING***							
033200 CAST-IN-PLACE CONCRETE								
ELEVATOR PIT WALLS								
FORM/STRIP PIT WALLS		SF	170.00	$	11.40	SF	$	**1,938**
SHEAR KEYWAY-ELEV PIT WALLS		LF	34.00	$	4.22	LF	$	**143**
WATERSTOP-PIT WALLS		LF	34.00	$	7.33	LF	$	**249**
REBAR TO PIT WALLS		TN	0.37	$	3,200.00	TN	$	**1,184**
POINT/PATCH WALLS		SF	85.00	$	1.17	SF	$	**99**
CONCRETE TO PIT WALLS	*4000 PSI*	CY	4.43	$	380.00	CY	$	**1,683**
SUBTOTAL- ELEVATOR PIT WALLS							$	**5,297**
SLABS ON GRADE-4" TH								
CONCRETE TO SLAB ON GRADE		CY	142.84	$	328.00	CY	$	**46,850**
ADD FOR MOSTURE BARRIER ADMIXTURE	*N/A-EXCLUDED*	CY	-	$	139.00	CY	$	-
FINE GRADE SUBGRADE		SF	8,815.00	$	0.30	SF	$	**2,645**
CONSTRUCTION JOINTS		LF	200.00	$	7.07	LF	$	**1,413**
EDGE FORMS- 9"	*DOOR OPENINGS/FLR OPENINGS*	LF	150.00	$	9.89	LF	$	**1,483**
RECESSED EDGE FORMS	*N/A*	LF	-	$	8.60	LF	$	-
REBAR TO SLAB ON GRADE- #4'S AT 18" OC	*N/A-SEE WIRE MESH BELOW*	TN	-	$	3,200.00	TN	$	-
WIRE MESH REINFORCING		SF	9,696.50	$	0.67	SF	$	**6,497**
CONTROL JOINTS- SAWN		LF	1,145.95	$	3.85	LF	$	**4,415**
TROWEL FINISH SLAB ON GRADE		SF	8,815.00	$	0.75	SF	$	**6,585**
CURE & PROTECT SLAB ON GRADE		SF	8,815.00	$	0.61	SF	$	**5,407**
PERIMETER JOINT FILLER - 4" X 1/2"		LF	502.00	$	7.37	LF	$	**3,698**
FORM COLUMN POCKETS		EA	40.00	$	73.00	EA	$	**2,920**
GROUT COLUMN POCKETS		EA	40.00	$	74.15	EA	$	**2,966**
ADD FOR UNDERSLAB INSULATION-3"		SF	8,815.00	$	3.50	SF	$	**30,853**
SUBTOTAL- SLABS ON GRADE							$	**115,732**
SLABS ON GRADE-6"								
CONCRETE TO SLAB ON GRADE		CY	145.08	$	328.00	CY	$	**47,585**
ADD FOR FLOOR DRAIN POURBACK		CY	40.59	$	328.00	CY	$	**13,314**
ADD FOR MOSTURE BARRIER ADMIXTURE	*N/A-EXCLUDED*	CY	-	$	139.00	CY	$	-
FINE GRADE SUBGRADE		SF	7,461.00	$	0.30	SF	$	**2,238**
CONSTRUCTION JOINTS	*N/A*	LF	-	$	7.07	LF	$	-
EDGE FORMS- 16"	*DOOR OPENINGS/FLR OPENINGS*	LF	120.00	$	9.89	LF	$	**1,187**
RECESSED EDGE FORMS		LF	75.00	$	8.60	LF	$	**645**
REBAR TO SLAB ON GRADE- #4'S AT 18" OC	*1.20#/SF + SUPPLEMENTAL REINF*	TN	4.48	$	3,200.00	TN	$	**14,325**
WIRE MESH REINF- 6X6/W2.9/2.9	*N/A-SEE REBAR ABOVE*	SF	-	$	0.67	SF	$	-
CONTROL JOINTS- SAWN		LF	969.93	$	3.85	LF	$	**3,737**
TROWEL FINISH SLAB ON GRADE		SF	7,461.00	$	0.75	SF	$	**5,574**
CURE & PROTECT SLAB ON GRADE		SF	7,461.00	$	0.61	SF	$	**4,576**
PERIMETER JOINT FILLER - 6" X 1/2"		LF	378.00	$	7.37	LF	$	**2,785**
FORM COLUMN POCKETS		EA	30.00	$	73.00	EA	$	**2,190**
GROUT COLUMN POCKETS		EA	30.00	$	74.15	EA	$	**2,225**
ADD FOR UNDERSLAB INSULATION-3"		SF	7,461.00	$	3.50	SF	$	**26,114**
SUBTOTAL- SLABS ON GRADE							$	**126,494**

DESCRIPTION		UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL		TOTAL
030000 CONCRETE	***HQ BUILDING***							
033200 CAST-IN-PLACE CONCRETE								
SLABS ON METAL DECKING-4.5"								
CONCRETE TO SLABS ON DECK	*4000 PSI-NORMAL WT*	CY	107.54	$	340.00	CY	$	**36,562**
ADD FOR MOSTURE BARRIER ADMIXTURE	*N/A-EXCLUDED*	CY	-	$	139.00	CY	$	-
WIRE MESH REINF.- 6X6/W2.9		SF	5,806.90	$	1.10	SF	$	**6,388**
REBAR TO SLABS ON DECK	*N/A - EXCLUDED*	TN	-	$	3,200.00	TN	$	-
WELDED REBARS- TO POUR STOP		EA	408.00	$	89.00	EA	$	**36,312**
TROWEL FINISH SLABS ON DECK		SF	5,279.00	$	0.71	SF	$	**3,733**
CURE & PROTECT SLABS ON DECK		SF	5,279.00	$	0.35	SF	$	**1,865**
SUBTOTAL- SLABS ON METAL DECKING							$	**84,859**
METAL PAN STAIR FILL								
CONCRETE TO METAL PAN STAIRS	*4000 PSI*	CY	3.47	$	380.00	CY	$	**1,319**
WIRE MESH REINF.- 6X6/W2.1		SF	392.70	$	1.90	SF	$	**746**
FINISH MTL PAN STAIR TREADS/PLATFORMS		SF	357.00	$	1.83	SF	$	**655**
CURE & PROTECT METAL STAIR PANS/PLATFORMS		SF	357.00	$	0.78	SF	$	**278**
SUBTOTAL- METAL PAN STAIR FILL							$	**2,998**
MEP EQUIPMENT PADS/MISC CONCRETE								
HOUSEKEEPING PADS		LS	1.00	$	3,600.00	LS	$	**3,600**
FIRE PUMP PIT		EA	1.00	$	3,600.00	EA	$	**3,600**
GROUT ELEVATOR SILLS		EA	2.00	$	150.00	EA	$	**300**
SET / GROUT PIPE BOLLARDS	*SITE & DUMPSTER ENCLOSURE*	EA	23.00	$	260.00	EA	$	**5,980**
SHRINKAGE REDUCER ADMIXTURE	*FOUNDATIONS & SLAB ON GRADE*	CY	696.85	$	62.00	CY	$	**43,205**
SUBTOTAL- MEP EQUIPMENT PADS/MISC CONCRETE							$	**56,685**
CONCRETE PUMPING / HOISTING								
CONCRETE PUMP		DYS	10.00	$	3,180.00	DYS	$	**31,800**
CONCRETE CLEANOUT		PULLS	3.00	$	675.00	PULLS	$	**2,025**
WEATHER PROTECTION	*N/A-EXCLUDED*	LS	-	$	120,000.00	LS	$	-
SUBTOTAL- CONCRETE PUMPING/HOISTING							$	**33,825**
030000 CONCRETE - TOTALS	***HQ BUILDING***						$	**798,254**

DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL		TOTAL
030000 CONCRETE	***SAR BUILDING***						
033200 CAST-IN-PLACE CONCRETE							
FOOTING - 72" X 72" X 16"	**EA**	**20.00**					
FORM/STRIP COLUMN FOOTINGS	SF	645.00	$	17.25	SF	$	**10,374**
SET ANCHOR BOLTS/TEMPLATES	SETS	20.00	$	88.00	SETS	$	**1,760**
GROUT COLUMN BASE PLATES	EA	20.00	$	75.04	EA	$	**1,501**
REBAR TO COLUMN FOOTINGS	TN	1.94	$	3,760.00	TN	$	**7,309**
CONCRETE TO COLUMN FOOTINGS	CY	43.20	$	352.00	CY	$	**15,206**
SUBTOTAL- COLUMN FOOTINGS						$	**36,151**
WALL FOOTING - 16" X 12"							
FORM/STRIP WALL FOOTINGS	SF	745.00	$	14.43	SF	$	**10,753**
SHEAR KEYWAY-WALL FOOTINGS	LF	373.00	$	4.25	LF	$	**1,585**
REBAR TO WALL FOOTINGS	TN	0.81	$	3,600.00	TN	$	**2,916**
CONCRETE TO WALL FOOTINGS	CY	21.60	$	368.00	CY	$	**7,949**
SUBTOTAL- WALL FOOTINGS						$	**23,203**
COLUMN PIERS							
FORM/STRIP COLUMN PIERS	SF	390.00	$	12.68	SF	$	**4,466**
SET ANCHOR BOLTS/TEMPLATES	SETS	20.00	$	88.00	SETS	$	**1,760**
GROUT COLUMN BASE PLATES	EA	20.00	$	75.04	EA	$	**1,501**
REBAR TO COLUMN PIERS	TN	0.90	$	3,200.00	TN	$	**2,880**
CONCRETE TO COLUMN PIERS	CY	7.20	$	340.00	CY	$	**2,448**
SUBTOTAL- COLUMN PIERS						$	**13,055**
STEM WALLS - 8" X 36"							
FORM/STRIP STEM WALLS	SF	2,231.00	$	14.33	SF	$	**31,978**
FORM/STRIP PANEL SHELF	LF	372.00	$	21.25	LF	$	**7,905**
REBAR TO STEM WALLS- 100#/CY	TN	1.85	$	4,000.00	TN	$	**7,392**
POINT & PATCH STEM WALLS	SF	1,115.50	$	1.43	SF	$	**1,599**
CONCRETE TO STEM WALLS	CY	33.60	$	368.00	CY	$	**12,365**
SUBTOTAL- STEM WALLS						$	**61,238**
TIE BEAMS - 12" X 18"							
FORM/STRIP TIE BEAMS	SF	726.00	$	14.33	SF	$	**10,406**
REBAR TO TIE BEAMS- 100#/CY	TN	0.89	$	4,000.00	TN	$	**3,549**
CONCRETE TO TIE BEAMS	CY	16.13	$	368.00	CY	$	**5,937**
SUBTOTAL- TIE BEAMS						$	**19,892**

DESCRIPTION		UNIT OF MEASURE	QUANTITY	UNIT PRICE	TOTAL	TOTAL
030000 CONCRETE	***SAR BUILDING***					
033200 CAST-IN-PLACE CONCRETE						
SLABS ON GRADE-4" TH						
CONCRETE TO SLAB ON GRADE		CY	23.53	$ 335.00 CY	$	**7,882**
ADD FOR THICKENED SLAB AT FRAMED WALLS		CY	16.96	$ 328.00 CY	$	**5,564**
ADD FOR MOSTURE BARRIER ADMIXTURE	*N/A-EXCLUDED*	CY	-	$ 300.00 CY	$	**-**
FINE GRADE SUBGRADE		SF	1,815.00	$ 0.30 SF	$	**545**
CONSTRUCTION JOINTS		LF	-	$ 8.73 LF	$	**-**
EDGE FORMS- 9"	*DOOR OPENINGS/FLR OPENINGS*	LF	75.00	$ 12.11 LF	$	**908**
RECESSED EDGE FORMS	*N/A*	LF	-	$ 10.60 LF	$	**-**
REBAR TO SLAB ON GRADE- #4'S AT 18" OC	*N/A-SEE WIRE MESH BELOW*	TN	-	$ 3,500.00 TN	$	**-**
WIRE MESH REINF- 6X6/W2.9/2.9		SF	1,996.50	$ 0.77 SF	$	**1,537**
CONTROL JOINTS- SAWN		LF	235.95	$ 4.59 LF	$	**1,084**
TROWEL FINISH SLAB ON GRADE		SF	1,815.00	$ 0.75 SF	$	**1,356**
CURE & PROTECT SLAB ON GRADE		SF	1,815.00	$ 0.61 SF	$	**1,113**
PERIMETER JOINT FILLER - 4" X 1/2"		LF	186.00	$ 9.03 LF	$	**1,680**
FORM COLUMN POCKETS		EA	8.00	$ 89.00 EA	$	**712**
GROUT COLUMN POCKETS		EA	8.00	$ 89.19 EA	$	**714**
ADD FOR UNDERSLAB INSULATION-3"		SF	1,815.00	$ 3.50 SF	$	**6,353**
SUBTOTAL- SLABS ON GRADE					$	**29,447**
SLABS ON GRADE-6"						
CONCRETE TO SLAB ON GRADE		CY	72.66	$ 335.00 CY	$	**24,342**
ADD FOR FLOOR DRAIN POURBACK		CY	29.63	$ 335.00 CY	$	**9,926**
ADD FOR MOSTURE BARRIER ADMIXTURE	*N/A-EXCLUDED*	CY	-	$ 139.00 CY	$	**-**
FINE GRADE SUBGRADE		SF	3,737.00	$ 0.30 SF	$	**1,121**
CONSTRUCTION JOINTS	*N/A*	LF	-	$ 8.73 LF	$	**-**
EDGE FORMS- 16"	*DOOR OPENINGS/FLR OPENINGS*	LF	155.00	$ 12.11 LF	$	**1,877**
RECESSED EDGE FORMS		LF	85.00	$ 10.60 LF	$	**901**
REBAR TO SLAB ON GRADE- #4'S AT 18" OC	*1.20#/SF + SUPPLEMENTAL REINF*	TN	2.24	$ 3,500.00 TN	$	**7,848**
WIRE MESH REINF- 6X6/W2.9/2.9	*N/A-SEE REBAR ABOVE*	SF	-	$ 0.77 SF	$	**-**
CONTROL JOINTS- SAWN		LF	485.81	$ 4.59 LF	$	**2,232**
TROWEL FINISH SLAB ON GRADE		SF	3,737.00	$ 0.75 SF	$	**2,792**
CURE & PROTECT SLAB ON GRADE		SF	3,737.00	$ 0.61 SF	$	**2,292**
PERIMETER JOINT FILLER - 6" X 1/2"		LF	406.00	$ 9.03 LF	$	**3,668**
FORM COLUMN POCKETS		EA	18.00	$ 89.00 EA	$	**1,602**
GROUT COLUMN POCKETS		EA	18.00	$ 89.19 EA	$	**1,605**
ADD FOR UNDERSLAB INSULATION-3"		SF	3,737.00	$ 3.50 SF	$	**13,080**
SUBTOTAL- SLABS ON GRADE					$	**73,285**

DESCRIPTION		UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL		TOTAL
030000 CONCRETE	***SAR BUILDING***							
033200 CAST-IN-PLACE CONCRETE								
MEP EQUIPMENT PADS/MISC CONCRETE								
HOUSEKEEPING PADS		LS	1.00	$ 1,500.00	LS	$		**1,500**
SET / GROUT PIPE BOLLARDS		EA	16.00	$ 260.00	EA	$		**4,160**
SHRINKAGE REDUCER ADMIXTURE	*FOUNDATIONS & SLABS ON GRADE*	CY	264.52	$ 62.00	CY	$		**16,400**
SUBTOTAL- MEP EQUIPMENT PADS/MISC CONCRETE						$		**22,060**
CONCRETE PUMPING / HOISTING								
CONCRETE PUMP		DYS	5.00	$ 3,180.00	DYS	$		**15,900**
CONCRETE CLEANOUT		PULLS	2.00	$ 675.00	PULLS	$		**1,350**
WEATHER PROTECTION	*N/A-EXCLUDED*	LS	-	$ 60,000.00	LS	$		-
SUBTOTAL- CONCRETE PUMPING/HOISTING						$		**17,250**
030000 CONCRETE - TOTALS	***SAR BUILDING***					$		**295,581**

DESCRIPTION		UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL		TOTAL
040000 MASONRY	***HQ BUILDING***							
042200 UNIT MASONRY								
8" CMU WALLS/ NON- STRUCTURAL-SMOOTH FACE*	***DUMPSTER ENCLOSURE***	***SF***	**416.00**					
8" HOLLOW CMU-SMOOTH FACE		PC	437.35	$	23.29	PC	$	**10,184**
8" BOND BEAM CMU-SMOOTH FACE		PC	41.05	$	19.50	PC	$	**801**
MORTAR		CY	0.88	$	350.00	CY	$	**307**
VERTICAL REINF. STEEL-8" PTNS	*N/A-EXCLUDED*	LB	-	$	0.82	LB	$	-
8" DUROWALL REINFORCING- 16" OC		LF	332.80	$	0.24	LF	$	**80**
ADD FOR GROUTING 8"' WALLS.	*N/A-EXCLUDED*	SF	-	$	0.90	SF	$	-
SCAFFOLDING		SF	416.00	$	0.80	SF	$	**333**
TOOL JOINTS		SF	416.00	$	0.15	SF	$	**62**
BOND BEAM REINF. STEEL- 2 #5'S		LB	120.00	$	0.82	LB	$	**98**
8" CMU WALLS/ NON- STRUCTURAL-SMOOTH FACE*	***GENERATOR ENCLOSURE***	***SF***	**404.27**					
8" HOLLOW CMU-SMOOTH FACE		PC	423.86	$	23.29	PC	$	**9,870**
8" BOND BEAM CMU-SMOOTH FACE		PC	41.05	$	19.50	PC	$	**801**
MORTAR		CY	0.85	$	350.00	CY	$	**298**
VERTICAL REINF. STEEL-8" PTNS	*N/A-EXCLUDED*	LB	-	$	0.82	LB	$	-
8" DUROWALL REINFORCING- 16" OC		LF	323.42	$	0.24	LF	$	**78**
ADD FOR GROUTING 8"' WALLS.	*N/A-EXCLUDED*	SF	-	$	0.90	SF	$	-
SCAFFOLDING		SF	404.27	$	0.80	SF	$	**323**
TOOL JOINTS		SF	404.27	$	0.15	SF	$	**61**
BOND BEAM REINF. STEEL- 2 #5'S		LB	120.00	$	0.82	LB	$	**98**
4" CMU VENEER-GROUND FACE	***INTERIOR VENEER***	***SF***	**3,123.00**					
4" CMU-GROUND FACE		PC	3,411.45	$	27.00	PC	$	**92,109**
4" BOND BEAM CMU-GROUND FACE		PC	180.00	$	17.00	PC	$	**3,060**
MORTAR		CY	6.58	$	350.00	CY	$	**2,305**
4" DUROWALL REINFORCING- 16" OC		LF	2,498.40	$	0.30	LF	$	**750**
SCAFFOLDING		SF	3,123.00	$	0.90	SF	$	**2,811**
TOOL JOINTS		SF	3,123.00	$	0.15	SF	$	**468**
EXTERIOR BRICK WALL VENEER*	***DUMPSTER ENCLOSURE***	**SF**	**154.11**					
EXTERIOR 4" BRICK WALL VENEER	*RUNNING BOND*	PC	1,078.77	$	3.70	PC	$	**3,991**
ADD FOR ROWLOCK WINDOW SILLS	*N/A*	LF	-	$	7.20	LF	$	-
ADD FOR SOLDIER COURSING	*ACCENT COURSING*	LF	850.00	$	7.20	LF	$	**6,120**
SET LINTELS	*SEE STRUCTURAL STEEL*	EA	-	$	60.00	EA	$	-
BASE /THRUWALL FLASHING		LF	1,600.00	$	12.00	LF	$	**19,200**
BRICK MORTAR-COLORED		CY	0.31	$	400.00	CY	$	**123**
SCAFFOLD EXTERIOR WALLS		SF	308.22	$	1.45	SF	$	**447**
TOOL JOINTS		SF	154.11	$	1.30	SF	$	**200**
WASHDOWN BRICK		SF	154.11	$	0.31	SF	$	**48**
BRICK ANCHORS- 1/ 4 SF OF WALL AREA	*GALVANIZED*	EA	38.53	$	0.39	EA	$	**15**
EXTERIOR BRICK WALL VENEER*	***GENERATOR ENCLOSURE***	**SF**	**300.15**					
EXTERIOR 4" BRICK WALL VENEER	*RUNNING BOND*	PC	2,101.05	$	3.70	PC	$	**7,774**
ADD FOR ROWLOCK WINDOW SILLS	*N/A*	LF	-	$	7.20	LF	$	-
ADD FOR SOLDIER COURSING	*ACCENT COURSING*	LF	850.00	$	7.20	LF	$	**6,120**
SET LINTELS	*SEE STRUCTURAL STEEL*	EA	-	$	60.00	EA	$	-
BASE /THRUWALL FLASHING		LF	1,600.00	$	12.00	LF	$	**19,200**
BRICK MORTAR-COLORED		CY	0.60	$	400.00	CY	$	**240**
SCAFFOLD EXTERIOR WALLS		SF	600.30	$	1.45	SF	$	**870**
TOOL JOINTS		SF	300.15	$	1.30	SF	$	**390**
WASHDOWN BRICK		SF	300.15	$	0.31	SF	$	**93**
BRICK ANCHORS- 1/ 4 SF OF WALL AREA	*GALVANIZED*	EA	75.04	$	0.39	EA	$	**29**

DESCRIPTION		UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL		TOTAL
040000 MASONRY	***HQ BUILDING***							
044300 STONE WORK								
EXTERIOR BRICK WALL VENEER*	***BUILDING WALLS- VENEER***	**SF**	**4,881.00**					
EXTERIOR 4" BRICK WALL VENEER	*RUNNING BOND*	PC	34,167.00	$	5.55	PC	$	**189,553**
ADD FOR ROWLOCK WINDOW SILLS	*N/A*	LF	-	$	7.20	LF	$	-
ADD FOR SOLDIER COURSING	*ACCENT COURSING*	LF	850.00	$	7.20	LF	$	**6,120**
SET LINTELS	*SEE STRUCTURAL STEEL*	EA	-	$	60.00	EA	$	-
BASE /THRUWALL FLASHING		LF	1,600.00	$	12.00	LF	$	**19,200**
BRICK MORTAR-COLORED		CY	9.74	$	400.00	CY	$	**3,898**
SCAFFOLD EXTERIOR WALLS		SF	9,762.00	$	1.45	SF	$	**14,155**
TOOL JOINTS		SF	4,881.00	$	1.30	SF	$	**6,345**
WASHDOWN BRICK		SF	4,881.00	$	0.31	SF	$	**1,513**
BRICK ANCHORS- 1/ 4 SF OF WALL AREA	*GALVANIZED*	EA	1,220.25	$	0.39	EA	$	**476**
SUBTOTAL- UNIT MASONRY							$	**431,016**
EXTERIOR WALLS- -STONE VENEER - SINGLE COLOR - ASHLAR PATTERN*	***BUILDING WALLS- VENEER***	***SF***	***1,689.00***					
EXTERIOR 4" NAT STONE WALL VENEER		SF	1,689.00	$	77.89	SF	$	**131,554**
BASE/THRU-WALL FLASHING	*SHEET METAL FLASHING*	LF	776.00	$	27.71	LF	$	**21,506**
WASHDOWN STONE VENEER		SF	1,689.00	$	1.62	SF	$	**2,736**
WALL ANCHORS- 1/ 4 SF OF WALL AREA	*STAINLESS STEEL*	EA	422.25	$	2.35	EA	$	**992**
INSTALL CAST STONE SILLS	*INSTALL LABOR-SEE MAT'L BELOW*	LF	533.00	$	36.67	LF	$	**19,543**
EXTERIOR WALLS- -STONE VENEER - SINGLE COLOR - ASHLAR PATTERN*	***DUMPSTER ENCLOSURE WALLS - VENEER***	***SF***	***126.54***					
EXTERIOR 4" NAT STONE WALL VENEER		SF	126.54	$	56.50	SF	$	**7,150**
BASE/THRU-WALL FLASHING	*SHEET METAL FLASHING*	LF	425.00	$	27.71	LF	$	**11,779**
WASHDOWN STONE VENEER		SF	126.54	$	1.62	SF	$	**205**
WALL ANCHORS- 1/ 4 SF OF WALL AREA	*STAINLESS STEEL*	EA	31.64	$	2.35	EA	$	**74**
INSTALL CAST STONE SILLS	*INSTALL LABOR-SEE MAT'L BELOW*	LF	38.00	$	36.67	LF	$	**1,393**
INSTALL CAST STONE WALL CAPS	*INSTALL LABOR-SEE MAT'L BELOW*	LF	38.00	$	36.67	LF	$	**1,393**
EXTERIOR WALLS- -STONE VENEER - SINGLE COLOR - ASHLAR PATTERN*	***GENERATOR ENCLOSURE WALLS - VENEER***	***SF***	***149.85***					
EXTERIOR 4" NAT STONE WALL VENEER		SF	149.85	$	56.50	SF	$	**8,467**
BASE/THRU-WALL FLASHING	*SHEET METAL FLASHING*	LF	425.00	$	27.71	LF	$	**11,779**
WASHDOWN STONE VENEER		SF	149.85	$	1.62	SF	$	**243**
WALL ANCHORS- 1/ 4 SF OF WALL AREA	*STAINLESS STEEL*	EA	37.46	$	2.35	EA	$	**88**
INSTALL CAST STONE SILLS	*INSTALL LABOR-SEE MAT'L BELOW*	LF	43.00	$	36.67	LF	$	**1,577**
INSTALL CAST STONE WALL CAPS	*INSTALL LABOR-SEE MAT'L BELOW*	LF	43.00	$	36.67	LF	$	**1,577**
WEATHER PROTECTION		MO	2.50	$	21,660.00	/MO	$	**54,150**
DUMPSTERS		PULLS	6.00	$	550.00	PULL	$	**3,300**
SUBTOTAL- STONE WORK							$	**279,506**
045210 CAST STONE WORK								
CAST STONE SILLS-FURNISH & DELIVER	*TOP OF STONE VENEER*	LF	533.00	$	45.00	LF	$	**23,985**
CAST STONE SILLS-FURNISH & DELIVER	*DUMPSTER ENCLOSURE*	LF	38.00	$	45.00	LF	$	**1,710**
CAST STONE SILLS-FURNISH & DELIVER	*GENERATOR ENCLOSURE*	LF	43.00	$	45.00	LF	$	**1,935**
CAST STONE WALL CAPS-FURNISH & DELIVER	*DUMPSTER ENCLOSURE*	LF	38.00	$	55.00	LF	$	**2,090**
CAST STONE WALL CAPS-FURNISH & DELIVER	*GENERATOR ENCLOSURE*	LF	43.00	$	55.00	LF	$	**2,365**
SUBTOTAL- CAST STONE WORK							$	**32,085**
040000 MASONRY - TOTALS	***HQ BUILDING***						$	**742,607**

DESCRIPTION		UNIT OF MEASURE	QUANTITY	UNIT PRICE	UNIT PRICE TOTAL	TOTAL
050000 METALS	*HQ BUILDING*					
051200 STRUCTURAL STEEL						
BEAMS/JOISTS		TNS	45.30	$ 5,800.00	TNS	$ 262,740
GIRDERS		TNS	28.31	$ 5,800.00	TNS	$ 164,213
COLUMNS		TNS	22.65	$ 5,800.00	TNS	$ 131,370
BRACE FRAMES		TNS	22.65	$ 5,800.00	TNS	$ 131,370
MISC STEEL		TNS	22.65	$ 5,800.00	TNS	$ 131,370
MOMENT CONNECTIONS- FULL PEN WELDS	*N/A-EXCLUDED*	EA	-	$ 345.00	EA	$ -
SHEAR STUDS		EA	1,451.73	$ 3.38	EA	$ 4,912
TOUCH UP PRIMER PAINT		LS	1.00	$ 2,000.00	LS	$ 2,000
CRANE PADS/LEVELING		LS	1.00	$ 3,700.00	LS	$ 3,700
STRUCTURAL STEEL/JOIST ERECTION		DY	25.00	$ 9,500.00	DY	$ 237,500
SUBTOTAL- STRUCTURAL STEEL		**TNS**	**141.56**			**$ 1,069,174**
053100 METAL DECKING						
ROOF DECK - 3" 18 GA- PAINTED COATING		SF	19,058.60	$ 7.75	SF	$ 147,704
UGRADE FOR ACOUSTICAL DECK	*N/A-EXCLUDED*	SF	-	$ 2.60	SF	$ -
FLOOR DECK - 2.0" 18 GA- G60 COATING		SF	5,806.90	$ 10.52	SF	$ 61,089
SUBTOTAL- METAL DECKING						**$ 208,793**
055010 MISCELLANEOUS METALS						
UTILITY GRADE STEEL PAN STAIR W/RAILINGS		RI	55.00	$ 950.00	RI	$ 52,250
MECHANICAL SCREEN		LF	8.00	$ 531.67	LF	$ 4,253
EXTERIOR RAILINGS - PAINTED STEEL-5 LINE RAILS-ORNAMENTAL GRADE STL	*ROOFTOP PATIO*	LF	20.00	$ 281.67	LF	$ 5,633
INTERIOR RAILINGS - PAINTED STEEL-5 LINE RAILS	*TRAINING 213*	LF	20.00	$ 231.67	LF	$ 4,633
ELEVATOR SILL ANGLES		EA	2.00	$ 356.25	EA	$ 713
ELEVATOR PIT LADDER		EA	1.00	$ 1,140.00	EA	$ 1,140
ROOF CROSSOVER LADDER		EA	2.00	$ 3,350.00	EA	$ 6,700
BOLLARD-6" SCH40	*BUILDING*	EA	16.00	$ 670.00	EA	$ 10,720
BOLLARD-6" SCH40	*DUMPSTER ENCLOSURE*	EA	7.00	$ 670.00	EA	$ 4,690
DUMPSTER ENCLOSURE GATES		PR	1.00	$ 5,980.00	PR	$ 5,980
FALL PROTECTION	*ALLOW*	LS	1.00	$ 25,000.00	LS	$ 25,000
MISC METAL FABRICATIONS		SF	22,650.00	$ 1.85	SF	$ 41,903
SUBTOTAL- MISCELLANEOUS METALS						**$ 163,615**
050000 METALS - TOTALS	*HQ BUILDING*					**$ 1,441,582**
050000 METALS	*SAR BUILDING*					
055010 MISCELLANEOUS METALS						
BOLLARD-6" SCH40	*BUILDING*	EA	16.00	$ 670.00	EA	$ 10,720
FALL PROTECTION	*ALLOW*	LS	1.00	$ 7,500.00	LS	$ 7,500
MISC METAL FABRICATIONS		SF	5,942.00	$ 1.85	SF	$ 10,993
SUBTOTAL- MISCELLANEOUS METALS						**$ 29,213**
050000 METALS - TOTALS	*SAR BUILDING*					**$ 29,213**

DESCRIPTION		UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL	
060000 WOOD & PLASTICS	***HQ BUILDING***						
061100 ROUGH CARPENTRY							
ROOF BLOCKING-2" X 6" EXT/FIRE TREATED NAILERS	*MAIN ROOF AREAS-PERIM NAILERS*	LF	5,277.00	$ 7.00	LF	$	**36,939**
EXTERIOR PLYWOOD - COPING NAILERS- 16" W-EXT/FIRE TREATED	*PARAPETS*	SF	4,104.00	$ 5.50	SF	$	**22,572**
ROOF BLOCKING-1" X 4" TREATED NAILERS	*COPING SHIMS- PARAPETS*	LF	1,368.00	$ 5.00	LF	$	**6,840**
ROOF BLOCKING-1" X 6" TREATED NAILERS	*COPING SHIMS- PARAPETS*	LF	1,368.00	$ 7.00	LF	$	**9,576**
INTERIOR WALL STRAPPING/BLOCKING- @ MILLWORK/CASEWORK/ACCESSORIES		LF	1,780.00	$ 8.00	LF	$	**14,240**
ROUGH HARDWARE/FASTENERS		LS	1.00	$ 2,500.00	LS	$	**2,500**
DUMPSTER ENCLOSURE GATE SLATS		LS	1.00	$ 2,500.00	LS	$	**2,500**
ADD FOR FSC CERTIFIED LUMBER	*N/A-EXCLUDED*	LS	-	$ -	LS	$	-
SUBTOTAL- ROUGH CARPENTRY						$	**95,167**
064200 MILLWORK							
DISPLAY CASE	*DISPLAY 101*	LF	8.00	$ 750.00	LF	$	**6,000**
BASE CABINETS - PLAS LAM	*TRAINING 104*	LF	8.00	$ 375.00	LF	$	**3,000**
COUNTERTOPS- SOLID SURF	*TRAINING 104*	LF	8.00	$ 275.00	LF	$	**2,200**
RECEPTION DESK	*RECEPTION 106*	LF	10.00	$ 975.00	LF	$	**9,750**
WORK SURFACE- P-LAM W/ BACKSPLASH	*RECEPTION 106*	LF	8.00	$ 245.00	LF	$	**1,960**
BASE CABINETS - PLAS LAM	*CREW WORK 112*	LF	16.00	$ 375.00	LF	$	**6,000**
COUNTERTOPS- SOLID SURF	*CREW WORK 112*	LF	16.00	$ 275.00	LF	$	**4,400**
SHELVING	*SHOP 136*	LF	13.00	$ 375.00	LF	$	**4,875**
SHELVING	*SCBA 140*	LF	11.00	$ 375.00	LF	$	**4,125**
BASE CABINETS - PLAS LAM	*KITCHEN 200*	LF	79.00	$ 375.00	LF	$	**29,625**
COUNTERTOPS- SOLID SURF	*KITCHEN 200*	LF	79.00	$ 275.00	LF	$	**21,725**
WALL CABINETS - PLAS LAM	*KITCHEN 200*	LF	34.00	$ 315.00	LF	$	**10,710**
BASE CABINETS - PLAS LAM	*CONF ROOM 208*	LF	13.00	$ 375.00	LF	$	**4,875**
COUNTERTOPS- SOLID SURF	*CONF ROOM 208*	LF	13.00	$ 275.00	LF	$	**3,575**
BASE CABINETS - PLAS LAM	*COPY 209*	LF	26.00	$ 375.00	LF	$	**9,750**
COUNTERTOPS- SOLID SURF	*COPY 209*	LF	26.00	$ 275.00	LF	$	**7,150**
WALL CABINETS - PLAS LAM	*COPY 209*	LF	17.00	$ 315.00	LF	$	**5,355**
SHELVING	*RECORD STORAGE 210*	LF	29.00	$ 375.00	LF	$	**10,875**
LAVATORY COUNTERTOPS-W/SKIRT- SOLID SURF	*RESTROOMS*	LF	12.00	$ 375.00	LF	$	**4,500**
CUSTOM MILLWORK WALL-TV WALL W/SHELVING	*DAYROOM*	LF	16.00	$ 780.00	LF	$	**12,480**
FULL HT STORAGE CABINET-36" WIDE	*FITNESS*	EA	2.00	$ 900.00	EA	$	**1,800**
FULL HT STORAGE CABINET-36" WIDE	*LAUNDRY 123*	EA	4.00	$ 900.00	EA	$	**3,600**
WORK SURFACE- P-LAM W/ BACKSPLASH	*CREW WORK 112*	LF	40.00	$ 245.00	LF	$	**9,800**
WORK SURFACE- P-LAM W/ BACKSPLASH	*FP OFFICE 107*	LF	25.00	$ 245.00	LF	$	**6,125**
WINDOW SILLS- SOLID SURF		LF	254.00	$ 55.00	LF	$	**13,970**
FULL HT WARDROBE- 30" WIDE	*SLEEPING ROOMS*	EA	24.00	$ 865.00	EA	$	**20,760**
MISC CASEWORK		LS	1.00	$ 15,000.00	LS	$	**15,000**
SUBTOTAL- MILLWORK						$	**233,985**
060000 WOOD & PLASTICS - TOTALS	***HQ BUILDING***					$	**329,152**

DESCRIPTION		UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL		TOTAL
060000 WOOD & PLASTICS	***SAR BUILDING***							
061100 ROUGH CARPENTRY								
INTERIOR WALL STRAPPING/BLOCKING- @ CASEWORK/ACCESSORIES		LF	367.00	$	8.00	LF	$	**2,936**
INTERIOR PLYWOOD PANELING	*BAYS-8' HEIGHT*	SF	1,842.00	$	11.00	SF	$	**20,262**
MISC ROUGH CARPENTRY		LS	1.00	$	2,500.00	LS	$	**2,500**
SUBTOTAL- ROUGH CARPENTRY							$	**25,698**
064200 MILLWORK								
BASE CABINETS - PLAS LAM	*TOOL STORAGE 107*	LF	13.00	$	375.00	LF	$	**4,875**
COUNTERTOPS- STAINLESS	*TOOL STORAGE 107*	LF	13.00	$	275.00	LF	$	**3,575**
WALL CABINETS - PLAS LAM	*TOOL STORAGE 107*	LF	13.00	$	315.00	LF	$	**4,095**
SUBTOTAL- MILLWORK							$	**12,545**
060000 WOOD & PLASTICS - TOTALS	***SAR BUILDING***						$	**38,243**

DESCRIPTION		UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL	
070000 THERMAL & MOISTURE PROTECTION	***HQ BUILDING***						
070160 DAMPPROOFING							
DAMPPROOF STEM WALLS - W/PROTECTION BD	*SPRAY APPLIED-30 MILS*	SF	2,142.50	$ 2.40	SF	$	**5,142**
PERIMETER FOUNDATION INSULATION- 3" TH	*PERIM STEM WALLS*	SF	2,142.50	$ 4.02	SF	$	**8,603**
SUBTOTAL- DAMPPROOFING						$	**13,745**
070180 WATERPROOFING							
WATERPROOF ELEVATOR PIT WALLS		SF	85.00	$ 7.40	SF	$	**629**
SUBTOTAL- WATERPROOFING						$	**629**
070210 BUILDING INSULATION							
SPRAY-APPLIED INSULATION- CLOSED CELL-R9 (1.5" TH)		SF	19,908.00	$ 3.25	SF	$	**64,701**
SUBTOTAL- BUILDING INSULATION						$	**64,701**
072700 FIRESTOPPING							
FIRE SAFING- RATED WALLS		LF	500.00	$ 16.83	LF	$	**8,417**
SUBTOTAL- FIRESTOPPING						$	**8,417**
074213 METAL PANELS & TRIM							
ROOF PANELS-STANDING SEAM		SF	4,955.00	$ 41.00	SF	$	**203,155**
GYPSUM BD UNDERLAYMENT-1/2" TH		SF	4,955.00	$ 1.50	SF	$	**7,433**
ROOF INSULATION- R-45 (UN-TAPERED)		SF	4,955.00	$ 8.05	SF	$	**39,888**
VAPOR BARRIER		SF	4,955.00	$ 1.33	SF	$	**6,590**
HIGH TEMP UNDERLAYMENT		SF	4,955.00	$ 3.33	SF	$	**16,500**
PLYWOOD SHEATHING		SF	4,955.00	$ 3.00	SF	$	**14,865**
SEAMLESS GUTTER		LF	255.00	$ 35.00	LF	$	**8,925**
FASCIA TRIM		LF	255.00	$ 25.50	LF	$	**6,503**
FLASHING-AT DISSIMILAR MATERIALS		LF	761.00	$ 25.50	LF	$	**19,406**
MISC FLASHING		LS	1.00	$ 15,000.00	LS	$	**15,000**
SOFFIT PANELS		SF	717.20	$ 31.00	SF	$	**22,233**
SUBTOTAL- METAL PANELS & TRIM						$	**360,497**
074460 COMPOSITE SIDING & TRIM							
RESYSTA TRUGRAIN SIDING		SF	20,622.00	$ 23.00	SF	$	**474,306**
ATTACHMENT / SUPPORT FRAMING	*VERTICAL GIRT SUPPORT*	LF	11,342.10	$ 7.10	LF	$	**80,529**
MANLIFTS/HOISTING		LS	1.00	$ 11,500.00	LS	$	**11,500**
SUBTOTAL- COMPOSITE CEMENT SIDING & TRIM						$	**566,335**

DESCRIPTION		UNIT OF MEASURE	QUANTITY	UNIT PRICE TOTAL	TOTAL
070000 THERMAL & MOISTURE PROTECTION	***HQ BUILDING***				
075010 MEMBRANE ROOFING & FLASHING					
LOW SLOPE ROOFING****			***SF***	***11,722.00***	
EPDM ROOF MEMBRANE- ***90 MIL TH***	*FULLY ADHERED*	SF	11,722.00	$ 6.20 SF	$ 72,676
ROOF INSULATION- R-45 (UN-TAPERED)	*CONCURRENTLY FASTENED 1X*	SF	11,722.00	$ 9.55 SF	$ 111,945
ROOF INSULATION- ADD FOR TAPERED CRICKETS	*CONCURRENTLY FASTENED 1X*	SF	2,930.50	$ 5.30 SF	$ 15,532
VAPOR BARRIER		SF	11,722.00	$ 0.45 SF	$ 5,275
GYPSUM BD UNDERLAYMENT-1/2" TH		SF	11,722.00	$ 1.50 SF	$ 17,583
ROOF COVER BOARD- 0.50" TH-DENSE DECK/GLASS MAT		SF	11,722.00	$ 1.90 SF	$ 22,272
PERIMETER FLASHING- MEMBRANE MATERAL		SF	4,104.00	$ 10.75 SF	$ 44,118
PARAPET CAP	*FIBERGLASS*	LF	1,368.00	$ 75.50 LF	$ 103,284
PARAPET BRACKET	*FIBERGLASS*	EA	110.00	$ 85.50 EA	$ 9,405
MISC FLASHING- MEMBRANE-ROOF OPENINGS		SF	850.00	$ 7.50 SF	$ 6,375
ROOF WALKWAY PADS		SF	1,300.00	$ 7.10 SF	$ 9,230
CONTINUOUS INTERNAL ROOF GUTTER	*N/A*	LF	-	$ 88.00 LF	$ -
FLASH ROOF DRAINS/OVERFLOW DRAINS		EA	10.00	$ 195.00 EA	$ 1,950
ROOF HATCH & SAFETY POST		EA	2.00	$ 2,830.00 EA	$ 5,660
SUBTOTAL- MEMBRANE ROOFING					$ 425,305
				$ 36.28 SF	
075540 PEDESTAL DECK PAVERS					
PEDESTAL PAVERS- 2' X 2' - PRECAST		SF	649.00	$ 53.50 SF	$ 34,722
SUBTOTAL- PEDESTAL DECK PAVERS					$ 34,722
079100 CAULKING & SEALANTS					
CAULKING		SF	22,650.00	$ 0.60 SF	$ 13,590
SUBTOTAL- CAULKING & SEALANTS					$ 13,590
070000 THERMAL & MOISTURE PROTECTION - TOTALS	***HQ BUILDING***				$ 1,487,940

DESCRIPTION		UNIT OF MEASURE	QUANTITY	UNIT PRICE TOTAL		TOTAL
070000 THERMAL & MOISTURE PROTECTION	***SAR BUILDING***					
070160 DAMPPROOFING						
DAMPPROOF STEM WALLS - W/PROTECTION BD	*SPRAY APPLIED-30 MILS*	SF	1,115.50	$ 2.40	SF	$ 2,677
PERIMETER FOUNDATION INSULATION- 2" TH	*PERIM STEM WALLS*	SF	1,115.50	$ 4.02	SF	$ 4,479
SUBTOTAL- DAMPPROOFING						$ 7,157
072700 FIRESTOPPING						
FIRE SAFING- RATED WALLS		LF	50.00	$ 16.83	LF	$ 842
SUBTOTAL- FIRESTOPPING						$ 842
079100 CAULKING & SEALANTS						
CAULKING		SF	5,942.00	$ 0.60	SF	$ 3,565
SUBTOTAL- CAULKING & SEALANTS						$ 3,565
THERMAL & MOISTURE PROTECTION - 070000 TOTALS	***SAR BUILDING***					$ 11,563

DESCRIPTION		UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL		TOTAL
080000 DOORS & WINDOWS	***HQ BUILDING***							
081140 METAL DOORS & FRAMES								
HM DOOR FRAMES- 3' X 7'0"-16 GA - WELDED CORNERS		EA	58.00	$ 396.50	EA	$		22,997
HM DOOR FRAMES- 6' X 7'-16 GA -WELDED		EA	2.00	$ 471.00	EA	$		942
HM DOORS-3' X 7'0"-16 GA-FLUSH		EA	26.00	$ 717.50	EA	$		18,655
INSTALL HM DOOR & HARDWARE		EA	26.00	$ 195.00	EA	$		5,070
SUBTOTAL- HOLLOW METAL DOORS & FRAMES						$		47,664
082160 WOOD DOORS								
SOLID CORE WOOD DRS- WOOD VENEER-3' X 7' - FLUSH		EA	36.00	$ 897.00	/EA	$		32,292
INSTALL HM DOOR & HARDWARE		EA	36.00	$ 195.00	EA	$		7,020
SUBTOTAL- WOOD DOORS						$		39,312
083105 ACCESS DOORS								
FIREMANS TRAP DOOR		EA	1.00	$ 3,420.00	EA	$		3,420
SUBTOTAL- ACCESS DOORS						$		3,420
083135 SECTIONAL DOORS								
SECTIONAL OH DOOR -ALUMINUM FRAME GLAZED - 14'X14'		EA	8.00	$ 15,600.00	EA	$		124,800
SECTIONAL DOOR-14' X 10'	*EXTERIOR FITNESS DOOR*	EA	1.00	$ 20,000.00	EA	$		20,000
SUBTOTAL- SECTIONAL DOORS						$		144,800
084310 ALUMINUM ENTRANCES & STOREFRONT								
EXTERIOR ALUM/GLASS ENTRY DOORS-3'0" X 8'0" -MED STILE		EA	1.00	$ 4,500.00	/EA	$		4,500
INTERIOR ALUMINUM / GLASS STOREFRONT SYSTEM- MFG STD EXTRUSIONS- ANODIZED FIN.		SF	322.00	$ 105.00	SF	$		33,810
INTERIOR ALUM/GLASS ENTRY DOORS-3'0" X 7'0" -MED STILE		EA	3.00	$ 6,875.00	/EA	$		20,625
SUBTOTAL- ALUM STOREFRONTS & WINDOWS						$		58,935

DESCRIPTION		UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL		TOTAL
080000 DOORS & WINDOWS	***HQ BUILDING***							
085315 COMPOSITE WINDOWS								
COMPOSITE WINDOWS - INSULATED GLASS-TRIPLE PANE	*3'-0" X 6'-0"*	EA	44.00	$	1,930.00	/EA	$	**84,920**
INSTALL WINDOWS		EA	44.00	$	260.00	EA	$	**11,440**
SUBTOTAL- COMPOSITE WINDOWS							$	**96,360**
087210 FINISH HARDWARE								
DOOR HARDWARE- DOOR LEAFS	*WOOD DOORS*	EA	36.00	$	1,050.00	EA	$	**37,800**
DOOR HARDWARE- DOOR LEAFS	*HM DOORS*	EA	26.00	$	1,050.00	EA	$	**27,300**
DOOR HARDWARE- DOOR LEAFS	*ALUM DOORS*	EA	4.00	$	1,050.00	EA	$	**4,200**
KNOX BOX		EA	1.00	$	850.00	EA	$	**850**
SUBTOTAL- FINISH HARDWARE							$	**70,150**
088110 GLASS & GLAZING								
FRAMELESS MIRRORS- 10'4" X 4'	*FITNESS ROOM*	EA	3.00	$	950.00	EA	$	**2,850**
SLIDING SHOWER DOORS		EA	4.00	$	1,500.00	EA	$	**6,000**
MISC GLAZING		SF	22,650.00	$	0.50	SF	$	**11,325**
SUBTOTAL- GLASS & GLAZING							$	**20,175**
089900 ALUMINUM CURTAINWALL SYSTEM								
ALUMINUM FRAMED / GLAZED CURTAINWALL-6" MULLIONS- ANODIZED FINISH/ TRIPLE-GLAZED		SF	1,427.00	$	155.75	SF	$	**222,255**
TEMP WINDOW ENCLOSURES-RHINO CLOTH		SF	1,427.00	$	1.45	SF	$	**2,069**
SUBTOTAL- ALUMINUM CURTAINWALL SYSTEM							$	**224,324**
080000 DOORS & WINDOWS - TOTALS	***HQ BUILDING***						$	**480,816**

DESCRIPTION		UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL		TOTAL
080000 DOORS & WINDOWS	*SAR BUILDING*							
081140 METAL DOORS & FRAMES								
HM DOOR FRAMES- 3' X 7'0"-16 GA - WELDED CORNERS		EA	7.00	$	396.50	EA	$	**2,776**
HM DOOR FRAMES- 6' X 7'-16 GA -WELDED		EA	1.00	$	471.00	EA	$	**471**
HM DOORS-3' X 7'0"-16 GA-FLUSH		EA	9.00	$	717.50	EA	$	**6,458**
HM BORROWED LITE FRAMING		SF	144.00	$	45.00	SF	$	**6,480**
INSTALL HM DOOR & HARDWARE		EA	9.00	$	195.00	EA	$	**1,755**
SUBTOTAL- HOLLOW METAL DOORS & FRAMES							$	**17,939**
083135 OVERHEAD DOORS								
SECTIONAL OH DOOR -ALUMINUM FRAME GLAZED - 12'X12'		EA	8.00	$	14,750.00	EA	$	**118,000**
SUBTOTAL- OVERHEAD DOORS							$	**118,000**
084310 ALUMINUM ENTRANCES & STOREFRONT								
EXTERIOR ALUM/GLASS ENTRY DOORS-3'0" X 7'0" -MED STILE		EA	3.00	$	4,250.00	/EA	$	**12,750**
ALUM FRAMED STOREFRONT-4.5" DEEP FRAMING- ANODIZED FINISH/ 1" INSUL GLASS		SF	662.00	$	121.00	SF	$	**80,102**
TEMP WINDOW ENCLOSURES-RHINO CLOTH		SF	662.00	$	1.45	SF	$	**960**
SUBTOTAL- ALUM STOREFRONTS & WINDOWS							$	-
087210 FINISH HARDWARE								
DOOR HARDWARE- DOOR LEAFS	*HM DOORS*	EA	9.00	$	1,050.00	EA	$	**9,450**
DOOR HARDWARE- DOOR LEAFS	*ALUM DOORS*	EA	3.00	$	1,050.00	EA	$	**3,150**
KNOX BOX		EA	1.00	$	850.00	EA	$	**850**
SUBTOTAL- FINISH HARDWARE							$	**13,450**
088110 GLASS & GLAZING								
INTERIOR GLAZING SIDE LIGHTS & TRANSOMS		SF	144.00	$	40.00	SF	$	**5,760**
SUBTOTAL- GLASS & GLAZING							$	**5,760**
080000 DOORS & WINDOWS - TOTALS	*SAR BUILDING*						$	**202,055**

DESCRIPTION		UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL		TOTAL
090000 FINISHES	***HQ BUILDING***							
092510 DRYWALL & METAL SUPPORT FRAMING								
EXTERIOR WALLS- 8" STUDS********		**SF**	**17,610.00**					
8" METAL TRACK - T & B	*16 GA TRACK*	LF	1,366.00	$	26.00	LF	$	**35,516**
8" METAL STUD FRAMING- ASSUME 16 GA/16" OC		LF	14,088.00	$	17.88	LF	$	**251,823**
U CHANNEL BRIDGING	*16 GA COLD FORMED CHANNEL*	LF	683.00	$	6.88	LF	$	**4,698**
EXTERIOR WALL SHEATHING- DENSGLASS SHTHG		SF	17,610.00	$	5.40	SF	$	**95,094**
RIGID INSULATION-R18		SF	17,610.00	$	3.90	SF	$	**68,679**
ADD FOR THERMAL GIRT SYSTEM		SF	17,610.00	$	3.90	SF	$	**68,679**
RAIN SCREEN MOISTURE BARRIER SYSTEM- APPLIED TO EXTERIOR SHEATHING		SF	17,610.00	$	3.25	SF	$	**57,233**
5/8" DW TO EXTERIOR WALLS- INTERIOR SIDE		SF	13,207.50	$	3.08	SF	$	**40,723**
TAPE & FINISH DW		SF	13,207.50	$	1.52	SF	$	**20,044**
SCAFFOLD EXTERIOR WALLS		SF	17,610.00	$	1.30	SF	$	**22,893**
ENGINEERED SHOP DRAWINGS		LS	1.00	$	4,000.00	LS	$	**4,000**
EXTERIOR WALLS- 6" STUDS********		**SF**	**2,298.00**					
6" METAL TRACK - T & B	*16 GA TRACK*	LF	498.00	$	21.83	LF	$	**10,873**
6" METAL STUD FRAMING- ASSUME 16 GA/16" OC		LF	1,838.40	$	14.56	LF	$	**26,759**
U CHANNEL BRIDGING	*16 GA COLD FORMED CHANNEL*	LF	249.00	$	6.71	LF	$	**1,672**
EXTERIOR WALL SHEATHING- DENSGLASS SHTHG		SF	2,298.00	$	5.40	SF	$	**12,409**
RIGID INSULATION-R18		SF	2,298.00	$	3.90	SF	$	**8,962**
ADD FOR THERMAL GIRT SYSTEM		SF	2,298.00	$	5.90	SF	$	**13,558**
RAIN SCREEN MOISTURE BARRIER SYSTEM- APPLIED TO EXTERIOR SHEATHING		SF	2,298.00	$	4.30	SF	$	**9,881**
5/8" DW TO EXTERIOR WALLS- INTERIOR SIDE		SF	2,298.00	$	3.08	SF	$	**7,086**
TAPE & FINISH DW		SF	2,298.00	$	1.52	SF	$	**3,488**
SCAFFOLD EXTERIOR WALLS		SF	2,298.00	$	1.30	SF	$	**2,987**
EXTERIOR SOFFITS- DENSGLASS 0N SUSPENSION SYSTEM	*BUILDING OVERHANG-SOFFITS*	SF	652.00	$	13.70	SF	$	**8,932**
ENGINEERED SHOP DRAWINGS		LS	1.00	$	4,000.00	LS	$	**4,000**
INTERIOR WALLS- 9.5' HT	***FURRING WALLS***	***LF***	***58.00***					
3-5/8" MTL TRACK- T & B		LF	116.00	$	8.67	LF	$	**1,005**
ADD FOR SLIP/DEFLECTION TRACK	*N/A-EXCLUDED*	LF	-	$	4.08	LF	$	**-**
3-5/8" MTL STUD FRAMING		LF	551.00	$	7.44	LF	$	**4,098**
RESILIENT FURRING CHANNELS	*N/A-EXCLUDED*	LF	-	$	4.47	LF	$	**-**
CORNER BEAD TRIM		LF	58.00	$	2.93	LF	$	**170**
5/8" DW TO STUDS		SF	551.00	$	2.69	SF	$	**1,481**
ACOUSTIC INSULATION TO WALLS	*N/A-EXCLUDED*	SF	-	$	1.62	SF	$	**-**
TAPE & FINISH DW		SF	551.00	$	1.14	SF	$	**628**
SEAL PTNS TOP & BOT		LF	116.00	$	8.28	LF	$	**960**
INTERIOR WALLS- 9.5' HT		***LF***	***75.00***					
3-5/8" MTL TRACK- T & B		LF	150.00	$	8.67	LF	$	**1,300**
ADD FOR SLIP/DEFLECTION TRACK	*N/A-EXCLUDED*	LF	-	$	4.08	LF	$	**-**
3-5/8" MTL STUD FRAMING		LF	712.50	$	7.44	LF	$	**5,299**
RESILIENT FURRING CHANNELS	*N/A-EXCLUDED*	LF	-	$	4.47	LF	$	**-**
CORNER BEAD TRIM		LF	75.00	$	2.93	LF	$	**219**
5/8" DW TO STUDS		SF	1,425.00	$	2.69	SF	$	**3,830**
ACOUSTIC INSULATION TO WALLS		SF	712.50	$	1.62	SF	$	**1,153**
TAPE & FINISH DW		SF	1,425.00	$	1.14	SF	$	**1,625**
SEAL PTNS TOP & BOT		LF	150.00	$	8.28	LF	$	**1,242**

DESCRIPTION		UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL		TOTAL
090000 FINISHES	***HQ BUILDING***							
092510 DRYWALL & METAL SUPPORT FRAMING								
INTERIOR WALLS- 13.5' HT	***SLEEPING ROOM WALLS***	***LF***	***52.00***					
3-5/8" MTL TRACK- T & B		LF	208.00	$	8.67	LF	$	1,803
ADD FOR SLIP/DEFLECTION TRACK		LF	104.00	$	4.08	LF	$	424
3-5/8" MTL STUD FRAMING		LF	988.00	$	7.44	LF	$	7,348
RESILIENT FURRING CHANNELS		LF	208.00	$	4.47	LF	$	930
CORNER BEAD TRIM		LF	52.00	$	2.93	LF	$	152
5/8" DW TO STUDS		SF	2,106.00	$	2.69	SF	$	5,660
ACOUSTIC INSULATION TO WALLS		SF	1,404.00	$	1.62	SF	$	2,271
TAPE & FINISH DW		SF	1,404.00	$	1.14	SF	$	1,601
SEAL PTNS TOP & BOT		LF	208.00	$	8.28	LF	$	1,722
INTERIOR WALLS- 13.5' HT		***LF***	***856.00***					
3-5/8" MTL TRACK- T & B		LF	1,712.00	$	8.67	LF	$	14,837
ADD FOR SLIP/DEFLECTION TRACK		LF	856.00	$	4.08	LF	$	3,488
3-5/8" MTL STUD FRAMING		LF	11,556.00	$	7.44	LF	$	85,948
RESILIENT FURRING CHANNELS	*N/A-EXCLUDED*	LF	-	$	4.47	LF	$	-
CORNER BEAD TRIM		LF	856.00	$	2.93	LF	$	2,504
5/8" DW TO STUDS		SF	23,112.00	$	2.69	SF	$	62,114
ACOUSTIC INSULATION TO WALLS		SF	11,556.00	$	1.62	SF	$	18,694
TAPE & FINISH DW		SF	23,112.00	$	1.14	SF	$	26,348
SEAL PTNS TOP & BOT		LF	1,712.00	$	8.28	LF	$	14,172
INTERIOR WALLS- 13.5' HT		***LF***	***297.00***					
6" MTL TRACK- T & B		LF	594.00	$	8.67	LF	$	5,148
ADD FOR SLIP/DEFLECTION TRACK		LF	297.00	$	4.08	LF	$	1,210
6" MTL STUD FRAMING		LF	4,009.50	$	7.44	LF	$	29,821
RESILIENT FURRING CHANNELS	*N/A-EXCLUDED*	LF	-	$	4.47	LF	$	-
CORNER BEAD TRIM		LF	297.00	$	2.93	LF	$	869
5/8" DW TO STUDS		SF	8,019.00	$	2.69	SF	$	21,551
ACOUSTIC INSULATION TO WALLS		SF	4,009.50	$	1.62	SF	$	6,486
TAPE & FINISH DW		SF	8,019.00	$	1.14	SF	$	9,142
SEAL PTNS TOP & BOT		LF	594.00	$	8.28	LF	$	4,917
INTERIOR WALLS- 26.0' HT		***LF***	***221.00***					
6" MTL TRACK- T & B		LF	442.00	$	8.67	LF	$	3,831
ADD FOR SLIP/DEFLECTION TRACK		LF	221.00	$	4.08	LF	$	901
6" MTL STUD FRAMING		LF	5,746.00	$	7.44	LF	$	42,736
RESILIENT FURRING CHANNELS	*N/A-EXCLUDED*	LF	-	$	4.47	LF	$	-
CORNER BEAD TRIM		LF	221.00	$	2.93	LF	$	646
5/8" DW TO STUDS		SF	11,492.00	$	2.69	SF	$	30,885
ACOUSTIC INSULATION TO WALLS		SF	5,746.00	$	1.62	SF	$	9,295
TAPE & FINISH DW		SF	11,492.00	$	1.14	SF	$	13,101
SEAL PTNS TOP & BOT		LF	442.00	$	8.28	LF	$	3,659
1- HR RATED WALLS-SHAFT ASSEMBLY TYPE 12B*		***LF***	***31.00***					
8" CH TRACK- T & B		LF	124.00	$	11.00	LF	$	1,364
8" CH STUD FRAMING		LF	806.00	$	9.50	LF	$	7,657
CORNER BEAD TRIM		LF	31.00	$	2.58	LF	$	80
5/8" DW TO STUDS	*1 LAYER 1 SIDE*	SF	806.00	$	1.73	SF	$	1,390
1" SHAFTWALL LINER		SF	806.00	$	2.35	SF	$	1,894
ACOUSTIC INSULATION TO WALLS		SF	806.00	$	1.39	SF	$	1,119
TAPE & FINISH DW		SF	806.00	$	1.46	SF	$	1,177
SEAL PTNS TOP & BOT		LF	124.00	$	5.30	LF	$	657

DESCRIPTION		UNIT OF MEASURE	QUANTITY	UNIT PRICE TOTAL	TOTAL
090000 FINISHES	***HQ BUILDING***				
092510 DRYWALL & METAL SUPPORT FRAMING					
DRYWALL CEILINGS-SINGLE LAYER W/ BLACK IRON SUPPORT********	***FINISHED ROOM CEILINGS***				
1 1/2" MAIN CARRIER CHANNELS		LF	368.61	$ 7.58 LF	$ 2,795
7/8" CROSS RUNNERS		LF	558.50	$ 5.75 LF	$ 3,211
5/8" DW TO CEILINGS		SF	1,117.00	$ 2.90 SF	$ 3,239
TAPE & FINISH DW CEILINGS		SF	1,117.00	$ 1.38 SF	$ 1,539
MISCELLANEOUS INTERIORS***********					
ADD FOR IMPACT RESISTANT GYP BD	*CORRIDORS- TO 8 FT AFF*	SF	3,776.00	$ 1.05 SF	$ 3,965
ADD FOR IMPACT RESISTANT GYP BD	*FITNESS ROOM- TO 12FT AFF*	SF	1,824.00	$ 1.05 SF	$ 1,915
ADD FOR LEVEL 5 FINISH ON EXPOSED SURFACES	*N/A-EXCLUDED*	SF	-	$ 1.39 SF	$ -
ADD TILE BACKER BOARD	*WALL TILE*	SF	2,618.00	$ 0.70 SF	$ 1,833
ADD TILE BACKER BOARD	*INTERIOR CMU VENEER*	SF	3,123.00	$ 0.70 SF	$ 2,186
GYP BD SOFFITS/BULKHEADS	*ALLOW*	LS	1.00	$ 20,000.00 LS	$ 20,000
FRP	*ALLOW*	LS	1.00	$ 5,000.00 LS	$ 5,000
FINAL CLEANING- FINISHES		SF	22,650.00	$ 0.65 SF	$ 14,723
TEMPORARY HEATING		MO	5.00	$ 19,700.00 MO	$ 98,500
DUMPSTERS		PULLS	22.00	$ 1,000.00 PULL	$ 22,000
SUBTOTAL- DRYWALL & METAL SUPPORT FRAMING					$ 1,433,453
093120 CERAMIC TILE					
PORCELAIN CERAMIC FLOOR TILE- THINSET		SF	713.90	$ 22.62 SF	$ 16,145
CERAMIC WALL TILE - THIN SET		SF	2,618.00	$ 36.11 SF	$ 94,539
ADD FOR EPOXY MORTAR & GROUT		SF	3,331.90	$ 5.11 SF	$ 17,030
ADD FOR WP/ ANTI-FRACTURE MEMBRANE		SF	3,331.90	$ 5.05 SF	$ 16,826
SUBTOTAL- CERAMIC TILE					$ 144,540
095210 ACOUSTICAL CEILINGS					
ACT CEILINGS-2' X 2'- EXPOSED TEE GRID-DIRECT HUNG FROM STRUCT.		SF	8,436.00	$ 9.75 SF	$ 82,251
SUBTOTAL- ACOUSTICAL CEILINGS					$ 82,251
096520 RESILIENT FLOOR & BASE					
4" H RESILIENT BASE-COVED		LF	3,504.00	$ 4.38 LF	$ 15,330
LVT FLOOR TILE/PLANK		SF	1,276.00	$ 12.80 SF	$ 16,333
RUBBER ATHLETIC FLOORING		SF	1,058.40	$ 19.75 SF	$ 20,903
FLOORING MOISTURE MITIGATION	*ALLOW FOR UPGRADED ADHESIVES*	SF	2,334.40	$ 2.00 SF	$ 4,669
SUBTOTAL- RESILIENT FLOORING					$ 57,235
096810 CARPET					
WALKOFF CARPET- 2' X 2' TILES- DIRECT GLUEDOWN		SY	11.70	$ 103.75 SY	$ 1,214
CARPETING- 2' X 2' TILES- DIRECT GLUEDOWN		SY	452.34	$ 60.83 SY	$ 27,518
FLOORING MOISTURE MITIGATION		SF	4,071.10	$ 2.00 SF	$ 8,142
SUBTOTAL- CARPET					$ 36,874

DESCRIPTION		UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL		TOTAL
090000 FINISHES	***HQ BUILDING***							
099100 PAINTING & WALLCOVERING								
PAINT DRYWALL PTNS- LATEX-SINGLE COLOR		SF	28,705.50	$	1.86	SF	$	**53,392**
PAINT DRYWALL PTNS- EPOXY-SINGLE COLOR		SF	340.00	$	2.45	SF	$	**833**
PAINT DRYWALL PTNS- TNEMEC-SINGLE COLOR		SF	12,451.50	$	4.15	SF	$	**51,674**
PAINT DRYWALL CEILINGS- EPOXY-SINGLE COLOR		SF	1,117.00	$	2.65	SF	$	**2,960**
MASONRY SEALER	*INTERIOR & EXTERIOR*	SF	10,423.65	$	1.77	SF	$	**18,450**
PAINT EXPOSED STEEL STRUCTURE		SF	10,300.00	$	3.50	SF	$	**36,050**
SEALED CONCRETE		SF	13,800.00	$	1.90	SF	$	**26,220**
PAINT HM DOOR FRAMES		EA	60.00	$	230.00	EA	$	**13,800**
PAINT HM DOORS		EA	26.00	$	230.00	EA	$	**5,980**
PAINT STEEL STAIRS/RAILINGS		RI	55.00	$	81.00	RI	$	**4,455**
PAINT STEEL RAILINGS		LF	28.00	$	17.50	LF	$	**490**
PAINT STEEL LINTELS	*EXTERIOR WALLS*	LF	300.00	$	14.21	LF	$	**4,264**
PAINT BOLLARDS		EA	23.00	$	75.00	EA	$	**1,725**
TOUCHUP PAINTING		HRS	80.00	$	95.00	HRS	$	**7,600**
SUBTOTAL- PAINTING & WALLCOVERING							$	**227,893**
090000 FINISHES - TOTALS	***HQ BUILDING***						$	**1,982,246**

DESCRIPTION		UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL		TOTAL
090000 FINISHES	***SAR BUILDING***							
092510 DRYWALL & METAL SUPPORT FRAMING								
INTERIOR WALLS- 9.5' HT		***LF***	***65.00***					
3-5/8" MTL TRACK- T & B		LF	130.00	$	18.40	LF	$	2,392
ADD FOR SLIP/DEFLECTION TRACK	*N/A-EXCLUDED*	LF	-	$	6.95	LF	$	-
3-5/8" MTL STUD FRAMING		LF	617.50	$	14.63	LF	$	9,031
RESILIENT FURRING CHANNELS	*N/A-EXCLUDED*	LF	-	$	4.78	LF	$	-
CORNER BEAD TRIM		LF	65.00	$	5.80	LF	$	377
5/8" DW TO STUDS		SF	1,235.00	$	4.13	SF	$	5,094
ACOUSTIC INSULATION TO WALLS		SF	617.50	$	3.00	SF	$	1,853
TAPE & FINISH DW		SF	1,235.00	$	2.29	SF	$	2,828
SEAL PTNS TOP & BOT		LF	130.00	$	14.67	LF	$	1,907
INTERIOR WALLS- 17.0' HT		***LF***	***63.00***					
3-5/8" MTL TRACK- T & B		LF	126.00	$	18.40	LF	$	2,318
ADD FOR SLIP/DEFLECTION TRACK		LF	63.00	$	6.95	LF	$	438
3-5/8" MTL STUD FRAMING		LF	1,071.00	$	14.63	LF	$	15,663
RESILIENT FURRING CHANNELS	*N/A-EXCLUDED*	LF	-	$	4.78	LF	$	-
CORNER BEAD TRIM		LF	63.00	$	5.80	LF	$	365
5/8" DW TO STUDS		SF	2,142.00	$	4.13	SF	$	8,836
ACOUSTIC INSULATION TO WALLS		SF	1,071.00	$	3.00	SF	$	3,213
TAPE & FINISH DW		SF	2,142.00	$	2.29	SF	$	4,905
SEAL PTNS TOP & BOT		LF	126.00	$	14.67	LF	$	1,848
INTERIOR WALLS- 18.5' HT		***LF***	***13.00***					
3-5/8" MTL TRACK- T & B		LF	26.00	$	18.40	LF	$	478
ADD FOR SLIP/DEFLECTION TRACK		LF	13.00	$	6.95	LF	$	90
3-5/8" MTL STUD FRAMING		LF	240.50	$	14.63	LF	$	3,517
RESILIENT FURRING CHANNELS	*N/A-EXCLUDED*	LF	-	$	8.06	LF	$	-
CORNER BEAD TRIM		LF	13.00	$	5.80	LF	$	75
5/8" DW TO STUDS		SF	481.00	$	4.13	SF	$	1,984
ACOUSTIC INSULATION TO WALLS		SF	240.50	$	3.00	SF	$	722
TAPE & FINISH DW		SF	481.00	$	2.29	SF	$	1,101
SEAL PTNS TOP & BOT		LF	26.00	$	14.67	LF	$	381
INTERIOR WALLS- 9.5' HT		***LF***	***13.00***					
6" MTL TRACK- T & B		LF	26.00	$	16.50	LF	$	429
ADD FOR SLIP/DEFLECTION TRACK	*N/A-EXCLUDED*	LF	-	$	7.20	LF	$	-
6" MTL STUD FRAMING		LF	123.50	$	16.13	LF	$	1,991
RESILIENT FURRING CHANNELS	*N/A-EXCLUDED*	LF	-	$	8.25	LF	$	-
CORNER BEAD TRIM		LF	13.00	$	4.75	LF	$	62
5/8" DW TO STUDS		SF	247.00	$	4.13	SF	$	1,019
ACOUSTIC INSULATION TO WALLS		SF	123.50	$	2.60	SF	$	321
TAPE & FINISH DW		SF	247.00	$	2.21	SF	$	546
SEAL PTNS TOP & BOT		LF	26.00	$	12.55	LF	$	326
INTERIOR WALLS- 20.0' HT		***LF***	***61.00***					
6" MTL TRACK- T & B		LF	122.00	$	27.00	LF	$	3,294
ADD FOR SLIP/DEFLECTION TRACK		LF	61.00	$	8.70	LF	$	531
6" MTL STUD FRAMING		LF	1,220.00	$	19.00	LF	$	23,180
RESILIENT FURRING CHANNELS	*N/A-EXCLUDED*	LF	-	$	4.78	LF	$	-
CORNER BEAD TRIM		LF	61.00	$	7.55	LF	$	461
5/8" DW TO STUDS		SF	2,440.00	$	5.00	SF	$	12,200
ACOUSTIC INSULATION TO WALLS		SF	1,220.00	$	3.78	SF	$	4,613
TAPE & FINISH DW		SF	2,440.00	$	3.19	SF	$	7,784
SEAL PTNS TOP & BOT		LF	122.00	$	20.50	LF	$	2,501

DESCRIPTION		UNIT OF MEASURE	QUANTITY	UNIT PRICE TOTAL		TOTAL
090000 FINISHES	***SAR BUILDING***					
092510 DRYWALL & METAL SUPPORT FRAMING						
DRYWALL CEILINGS-SINGLE LAYER W/ BLACK IRON SUPPORT*******	***FINISHED ROOM CEILINGS***					
1 1/2" MAIN CARRIER CHANNELS		LF	77.55	$ 14.38 LF	$	1,115
7/8" CROSS RUNNERS		LF	117.50	$ 9.75 LF	$	1,146
5/8" DW TO CEILINGS		SF	235.00	$ 4.50 SF	$	1,058
TAPE & FINISH DW CEILINGS		SF	235.00	$ 2.29 SF	$	538
MISCELLANEOUS INTERIORS*******						
ADD FOR IMPACT RESISTANT GYP BD		SF	416.00	$ 1.05 SF	$	437
ADD FOR LEVEL 5 FINISH ON EXPOSED SURFACES	*N/A-EXCLUDED*	SF	-	$ 1.51 SF	$	-
ADD TILE BACKER BOARD	*WALL TILE*	SF	650.90	$ 0.70 SF	$	456
FRP	*ALLOW*	LS	1.00	$ 1,500.00 LS	$	1,500
FINAL CLEANING- FINISHES		SF	5,942.00	$ 0.65 SF	$	3,862
TEMPORARY HEATING		MO	5.00	$ 8,500.00 MO	$	42,500
DUMPSTERS		PULLS	2.00	$ 540.00 PULL	$	1,080
SUBTOTAL- DRYWALL & METAL SUPPORT FRAMING					$	182,366
093120 CERAMIC TILE						
PORCELAIN CERAMIC FLOOR TILE- THINSET		SF	184.80	$ 22.62 SF	$	4,179
CERAMIC WALL TILE - THIN SET		SF	650.90	$ 36.11 SF	$	23,505
ADD FOR EPOXY MORTAR & GROUT		SF	835.70	$ 5.11 SF	$	4,271
ADD FOR WP/ ANTI-FRACTURE MEMBRANE		SF	835.70	$ 5.05 SF	$	4,220
SUBTOTAL- CERAMIC TILE					$	36,176
096520 RESILIENT FLOOR & BASE						
4" H RESILIENT BASE-COVED		LF	585.00	$ 4.38 LF	$	2,559
SUBTOTAL- RESILIENT FLOORING					$	2,559
099100 PAINTING & WALLCOVERING						
PAINT DRYWALL PTNS- LATEX-SINGLE COLOR		SF	1,166.00	$ 1.86 SF	$	2,169
PAINT PLYWOOD PANELING- LATEX-SINGLE COLOR		SF	885.00	$ 2.20 SF	$	1,947
PAINT DRYWALL PTNS- EPOXY-SINGLE COLOR		SF	79.00	$ 2.45 SF	$	194
PAINT DRYWALL PTNS- TNEMEC-SINGLE COLOR		SF	1,643.00	$ 4.15 SF	$	6,818
PAINT DRYWALL CEILINGS- EPOXY-SINGLE COLOR		SF	235.00	$ 2.65 SF	$	623
PAINT EXPOSED STEEL STRUCTURE	*N/A-EXCLUDED*	SF	-	$ 3.50 SF	$	-
SEALED CONCRETE		SF	4,231.00	$ 1.90 SF	$	8,039
PAINT HM DOOR FRAMES		EA	11.00	$ 230.00 EA	$	2,530
PAINT HM DOORS		EA	9.00	$ 230.00 EA	$	2,070
PAINT BOLLARDS		EA	16.00	$ 75.00 EA	$	1,200
TOUCHUP PAINTING		HRS	30.00	$ 95.00 HRS	$	2,850
SUBTOTAL- PAINTING & WALLCOVERING					$	28,439
090000 FINISHES - TOTALS	***SAR BUILDING***				$	249,541

DESCRIPTION		UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL	
100000 SPECIALTIES	***HQ BUILDING***						
101200 VISUAL DISPLAY BOARDS							
DRY ERASE MARKER BOARD- 8' X 4'-ALUM FRAME W/ MARKER TRAY		EA	17.00	$ 675.00	EA	$	**11,475**
TACK BOARDS		EA	10.00	$ 236.67	EA	$	**2,367**
SUBTOTAL- VISUAL DISPLAY BOARDS						$	**13,842**
102600 WALL & CORNER PROTECTION							
CORNER GUARDS- 48" ACROVYN MTD-SURFACE MOUNTED	*EXPOSED CORNERS*	EA	34.00	$ 160.00	EA	$	**5,440**
SUBTOTAL- WALL & CORNER PROTECTION						$	**5,440**
103510 FLAGPOLES							
20 FT TAPERED FLAGPOLE-EXPOSED HALYARD		EA	2.00	$ 2,890.00	EA	$	**5,780**
EXCAV/SET ANCHOR SLEEVE/CONCRETE/ERECTION		EA	2.00	$ 1,784.00	EA	$	**3,568**
SUBTOTAL- FLAGPOLES						$	**9,348**
104010 IDENTIFYING DEVICES (SIGNAGE)							
INTERIOR ROOM ID SIGNS		EA	72.00	$ 106.45	EA	$	**7,664**
BUILDING DIRECTORY-MAIN LOBBY		EA	1.00	$ 6,040.00	EA	$	**6,040**
EXTERIOR BUILDING MOUNTED LETTERING		LS	1.00	$ 19,700.00	LS	$	**19,700**
BUILDING DEDICATION PLAQUE		EA	1.00	$ 1,380.00	EA	$	**1,380**
FIRE STATION SYMBOL SIGN		EA	1.00	$ 4,500.00	EA	$	**4,500**
SUBTOTAL- IDENTIFYING DEVICES						$	**39,284**
105205 FIRE EXTINGUISHERS & CABS							
FIRE EXTINGUISHERS		EA	12.00	$ 115.38	EA	$	**1,385**
FIRE EXTINGUISHER CABINETS- PTD STEEL CABINET/ SS DOOR & TRIM		EA	12.00	$ 271.65	EA	$	**3,260**
SUBTOTAL- FIRE EXTINGUISHERS & CABINETS						$	**4,644**

DESCRIPTION		UNIT OF MEASURE	QUANTITY	UNIT PRICE TOTAL		TOTAL
100000 SPECIALTIES	***HQ BUILDING***					
105210 LOCKERS						
WALL MOUNTED FIREMANS LOCKERS- GEARGRID		EA	53.00	$ 675.00 EA	$	35,775
SUBTOTAL- LOCKERS					$	35,775
108010 TOILET ROOM ACCESSORIES						
TOILET PAPER HOLDER		EA	9.00	$ 153.00 EA	$	1,377
HANDICAP GRAB BARS	*TOILETS*	EA	21.00	$ 131.40 EA	$	2,759
HANDICAP GRAB BARS	*SHOWERS*	EA	4.00	$ 186.40 EA	$	746
LIQUID SOAP DIPSENSER	*TOILET ROOMS*	EA	9.00	$ 78.00 EA	$	702
HANDS FREE PAPER TOWEL DISPENSER		EA	2.00	$ 247.00 EA	$	494
SEMI-RECESSED PAPER TOWEL DISPENSER		EA	7.00	$ 412.00 EA	$	2,884
RECESSED SEAT COVER DISPENSER		EA	9.00	$ 204.40 EA	$	1,840
SANITARY NAPKIN DISPENSER		EA	9.00	$ 204.40 EA	$	1,840
FRAMED MIRROR- 30" X 54"		EA	4.00	$ 216.00 EA	$	864
FRAMED MIRROR- 42" X 54"		EA	3.00	$ 281.00 EA	$	843
FRAMED MIRROR- 60" X 54"		EA	2.00	$ 356.00 EA	$	712
CHANGING STATION		EA	4.00	$ 562.00 EA	$	2,248
JANITOR'S MOP RACK		EA	2.00	$ 208.32 EA	$	417
CLOTHES HOOKS		EA	7.00	$ 42.40 EA	$	297
TOWEL BARS		EA	7.00	$ 57.40 EA	$	402
SHOWER SEAT		EA	4.00	$ 272.40 EA	$	1,090
TOWEL BARS		EA	8.00	$ 57.40 EA	$	459
SUBTOTAL- TOILET ROOM ACCESSORIES					$	19,972
109000 MISCELLANEOUS SPECIALTIES						
6' WASH CENTER- GEARGRID	*WASH ALCOVES*	EA	2.00	$ 380.00 EA	$	760
HOSE STORAGE-GEARGRID		LS	1.00	$ 4,250.00 LS	$	4,250
ALUMINUM FOLDING WALL LADDER	*ALACO- MP60*	EA	1.00	$ 2,580.00 EA	$	2,580
D-RING TRAINING ANCHORS	*DURABILT D-RING-WO-1*	EA	6.00	$ 350.00 EA	$	2,100
SUBTOTAL- MISC SPECIALTIES					$	9,690
100000 SPECIALTIES - TOTALS	***HQ BUILDING***				$	137,996

DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL		TOTAL
100000 SPECIALTIES *SAR BUILDING*							
101200 VISUAL DISPLAY BOARDS							
DRY ERASE MARKER BOARD- 8' X 4'-ALUM FRAME W/ MARKER TRAY	EA	1.00	$	680.00	EA	$	**680**
TACK BOARDS	EA	1.00	$	160.83	EA	$	**161**
SUBTOTAL- VISUAL DISPLAY BOARDS						$	**841**
104010 IDENTIFYING DEVICES (SIGNAGE)							
INTERIOR ROOM ID SIGNS	EA	7.00	$	106.45	EA	$	**745**
EXTERIOR BUILDING MOUNTED LETTERING	LS	1.00	$	11,500.00	LS	$	**11,500**
SEARCH & RESCUE SYMBOL SIGN	EA	1.00	$	4,500.00	EA	$	**4,500**
BUILDING DEDICATION PLAQUE	EA	1.00	$	1,380.00	EA	$	**1,380**
SUBTOTAL- IDENTIFYING DEVICES						$	**18,125**
105205 FIRE EXTINGUISHERS & CABS							
FIRE EXTINGUISHERS	EA	3.00	$	115.38	EA	$	**346**
FIRE EXTINGUISHER CABINETS- PTD STEEL CABINET/ SS DOOR & TRIM	EA	3.00	$	271.65	EA	$	**815**
SUBTOTAL- FIRE EXTINGUISHERS & CABINETS						$	**1,161**
105210 LOCKERS							
WALL MOUNTED FIREMANS LOCKERS- GEARGRID	EA	28.00	$	680.00	EA	$	**19,040**
EQUIPMENT STORAGE	LF	41.00	$	580.00	LF	$	**23,780**
SUBTOTAL- LOCKERS						$	**42,820**

DESCRIPTION		UNIT OF MEASURE	QUANTITY	UNIT PRICE TOTAL	TOTAL
100000 SPECIALTIES	***SAR BUILDING***				
108010 TOILET ROOM ACCESSORIES					
TOILET PAPER HOLDER		EA	2.00	$ 153.00 EA	$ 306
HANDICAP GRAB BARS	*TOILETS*	EA	6.00	$ 131.40 EA	$ 788
HANDICAP GRAB BARS	*SHOWERS*	EA	1.00	$ 186.40 EA	$ 186
LIQUID SOAP DIPSENSER	*TOILET ROOMS*	EA	2.00	$ 78.00 EA	$ 156
HANDS FREE PAPER TOWEL DISPENSER		EA	2.00	$ 247.00 EA	$ 494
RECESSED SEAT COVER DISPENSER		EA	2.00	$ 204.40 EA	$ 409
SANITARY NAPKIN DISPENSER		EA	2.00	$ 204.40 EA	$ 409
FRAMED MIRROR- 30" X 54"		EA	2.00	$ 216.00 EA	$ 432
JANITOR'S MOP RACK		EA	1.00	$ 208.32 EA	$ 208
CLOTHES HOOKS		EA	2.00	$ 42.40 EA	$ 85
TOWEL BARS		EA	2.00	$ 57.40 EA	$ 115
SHOWER SEAT		EA	1.00	$ 57.40 EA	$ 57
TOWEL BARS		EA	1.00	$ 57.40 EA	$ 57
CHANGING STATION		EA	1.00	$ 562.00 EA	$ 562
SUBTOTAL- TOILET ROOM ACCESSORIES					$ 4,265
109000 MISCELLANEOUS SPECIALTIES					
ALUMINUM FOLDING WALL LADDER	*ALACO- MP60*	EA	1.00	$ 2,580.00 EA	$ 2,580
D-RING TRAINING ANCHORS	*DURABILT D-RING-WO-1*	EA	6.00	$ 350.00 EA	$ 2,100
SUBTOTAL- MISC SPECIALTIES					$ 4,680
100000 SPECIALTIES - TOTALS	***SAR BUILDING***				$ 71,892

DESCRIPTION		UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL	
110000 EQUIPMENT	***HQ BUILDING***						
111310 AUDIO VISUAL EQUIPMENT							
PROJECTION SCREENS-ELECTRIC WALL MTD UNIT- 12' X 7	*CONFERENCE ROOM*	EA	1.00	$ 3,370.00	EA	$	**3,370**
AV PROJECTOR- CEILING MOUNTS		EA	-	$ -	EA		**BY OWNER**
AV EQUIPMENT		LS	-	$ -	LS		**BY OWNER**
SUBTOTAL- AUDIO VISUAL EQUIPMENT						$	**3,370**
112100 FIRE PROTECTION FACILITY EQUIPMENT							
FIREMAN'S POLE		EA	1.00	$ 7,500.00	EA	$	**7,500**
SUBTOTAL- FIRE PROTECTION FACILITY EQUIPMENT						$	**7,500**
114550 RESIDENTIAL EQUIPMENT							
POT HANGING RACK, CEILING MOUNTED	*KITCHEN*	EA	1.00	$ 690.00	EA	$	**690**
REFRIGERATOR - UNDER COUNTER	*GE*	EA	1.00	$ 1,220.00	EA	$	**1,220**
PLUMBED COFFEE MAKER	*BUNN CWTF15-2*	EA	3.00	$ 970.00	EA	$	**2,910**
MICROWAVE OVEN	*GE*	EA	2.00	$ 410.00	EA	$	**820**
DISHWASHER	*GE PDWT380VSS*	EA	2.00	$ 1,850.00	EA	$	**3,700**
WASHER W/ STACKING KITS	*SPEED QUEEN*	EA	2.00	$ 2,350.00	EA	$	**4,700**
DRYER	*SPEED QUEEN*	EA	2.00	$ 1,550.00	EA	$	**3,100**
WASHER-EXTRACTOR, 60IB RIGID MT.	*MILNOR 30022 VRJ*	EA	1.00	$ 25,600.00	EA	$	**25,600**
REFRIGERATOR W/ FREEZER & ICE MAKER	*GE PWE23KSDSS*	EA	4.00	$ 3,620.00	EA	$	**14,480**
60" GAS RANGE/OVEN	*BLUESTAR RNB606FTV2*	EA	1.00	$ 25,180.00	EA	$	**25,180**
66" GAS RANGE VENTILATION HOOD		EA	1.00	$ 5,620.00	EA	$	**5,620**
SUBTOTAL- RESIDENTIAL EQUIPMENT						$	**88,020**
114000 COMMERCIAL EQUIPMENT							
STAINLESS COUNTERTOP W/ INTEGRAL SINK- 7'-6" LONG	*DECON*	EA	1.00	$ 1,684.00	EA	$	**1,684**
STAINLESS STEEL WALL MOUNTED SHELF- 7'-6" LONG	*DECON*	EA	1.00	$ 684.00	EA	$	**684**
STAINLESS STEEL BACKSPLASH	*KITCHEN*	SF	20.00	$ 73.40	SF	$	**1,468**
SUBTOTAL- COMMERCIAL EQUIPMENT						$	**3,836**
110000 EQUIPMENT - TOTALS	***HQ BUILDING***					$	**102,726**
110000 EQUIPMENT	***SAR BUILDING***						
114550 RESIDENTIAL EQUIPMENT							
PLUMBED COFFEE MAKER	*BUNN CWTF15-2*	EA	1.00	$ 842.00	EA	$	**842**
MICROWAVE OVEN	*GE*	EA	1.00	$ 346.00	EA	$	**346**
DISHWASHER	*GE PDWT380VSS*	EA	1.00	$ 1,415.00	EA	$	**1,415**
REFRIGERATOR W/ FREEZER & ICE MAKER	*GE PWE23KSDSS*	EA	1.00	$ 3,092.00	EA	$	**3,092**
ELECTRIC RANGE	*SD REPORT REV 01*	EA	1.00	$ 3,092.00	EA	$	**3,092**
SUBTOTAL- RESIDENTIAL EQUIPMENT						$	**8,787**
110000 EQUIPMENT - TOTALS	***SAR BUILDING***					$	**8,787**

DESCRIPTION		UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL	TOTAL
120000 FURNISHINGS	***HQ BUILDING***						
124910 WINDOW TREATMENTS							
MECHO SHADES-MANUAL SINGLE ROLLER		SF	1,104.00	$ 26.44	SF	$	29,187
MECHO SHADES-MAHUAL DUAL ROLLER W/ BLACKOUT		SF	650.00	$ 43.44	SF	$	28,234
SUBTOTAL- WINDOW TREATMENTS						$	57,421
120000 FURNISHINGS - TOTALS	***HQ BUILDING***					$	57,421

FCI Cost Worksheet
Project: EMERGENCY SERVICES CAMPUS
CBFPD

June 30, 2023
SCHEMATIC ESTIMATE R4

DESCRIPTION		UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL	TOTAL
130000 SPECIAL CONSTRUCTION	***SAR BUILDING***						
131210 PRE-ENGINEERED BUILDINGS							
PRE-ENGINEERED METAL BUILDING		SF	5,942.00	$ -	SF	$	**572,500**
ENCLOSE VEHICLE BAY		SF	874.00	$ -	SF		**INCLUDED**
WALK DOOR OPENINGS		EA	3.00	$ -	EA		**INCLUDED**
OVERHEAD DOOR OPENINGS		EA	6.00	$ -	EA		**INCLUDED**
WINDOW OPENINGS		EA	14.00	$ -	EA		**INCLUDED**
WALL PANELS-EXPOSED FASTENER	*VERTICAL-FIELD COLOR*	SF	1,222.00	$ -	SF		**INCLUDED**
WALL PANELS-EXPOSED FASTENER	*VERTICAL-WAINSCOT*	SF	631.00	$ -	SF		**INCLUDED**
WALL PANELS-EXPOSED FASTENER	*HORIZONTAL*	SF	2,132.00	$ -	SF		**INCLUDED**
ROOF PANELS-STANDING SEAM		SF	6,628.00	$ -	SF		**INCLUDED**
SNOW FENCE		LF	129.00	$ -	LF		**INCLUDED**
SHOP DRAWINGS		LS	1.00	$ -	LS		**INCLUDED**
ERECTION		LS	1.00	$ -	LS		**INCLUDED**
SUBTOTAL- PRE-ENGINEERED BUILDINGS						$	**572,500**
130000 SPECIAL CONSTRUCTION - TOTALS	***SAR BUILDING***					$	**572,500**

FCI Cost Worksheet

Project: EMERGENCY SERVICES CAMPUS
CBFPD

June 30, 2023
SCHEMATIC ESTIMATE R4
SF 22,650

DESCRIPTION		UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL		TOTAL
140000 CONVEYING SYSTEMS	***HQ BUILDING***							
142010 ELEVATORS								
ELEVATOR - 2 STOP HYDRAULIC UNITS- 150 FPM / 3500 # CAPACITY	*HOLE-LESS HYDRAULIC UNIT*	EA	1.00	$ 115,000.00	EA	$		**115,000**
ADD FOR CARD READER OPERATION	*N/A- EXCLUDED*	LS	1.00	$ -	LS	$		-
SUBTOTAL- ELEVATORS						$		**115,000**
14000 CONVEYING SYSTEMS - TOTALS	***HQ BUILDING***					$		**115,000**

DESCRIPTION		UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL		TOTAL
210000 FIRE SUPPRESSION SYSTEMS	***HQ BUILDING***							
215300 FIRE PROTECTION WORK								
FIRE SPRINKLERS - WET/DRY PIPE SYSTEM		SF	22,650.00	$	7.90	SF	$	**178,935**
BIM MODELING		LS	1.00	$	-	LS	$	**3,500**
FIRE PUMP - ELECTRIC		EA	1.00	$	90,000.00	EA	$	**90,000**
JOCKEY PUMP		EA	1.00	$	-	EA		**INCLUDED**
SUBTOTAL- FIRE PROTECTION WORK							$	**272,435**
210000 FIRE SUPPRESSION SYSTEMS - TOTALS	***HQ BUILDING***						$	**272,435**
210000 FIRE SUPPRESSION SYSTEMS	***SAR BUILDING***							
215300 FIRE PROTECTION WORK								
FIRE SPRINKLERS - WET/DRY PIPE SYSTEM		SF	5,942.00	$	8.20	SF	$	**48,724**
BIM MODELING		LS	1.00	$	-	LS	$	**1,500**
FIRE PUMP - ELECTRIC	*N/A-EXCLUDED*	EA	-	$	-	EA	$	-
JOCKEY PUMP	*N/A-EXCLUDED*	EA	-	$	-	EA	$	-
ACCESSIBLE CHASE	*ALLOWANCE*	LS	1.00	$	-	LS	$	**50,000**
SUBTOTAL- FIRE PROTECTION WORK							$	**100,224**
210000 FIRE SUPPRESSION SYSTEMS - TOTALS	***SAR BUILDING***						$	**100,224**

DESCRIPTION		UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL		TOTAL
2/230000 MECHANICAL	***HQ BUILDING***							
224100 PLUMBING								
PLUMBING- FIXTURES / EQUIPMENT / DOMESTIC / STORM / WASTE / VENT		SF	22,650.00	$	19.00	SF	$	**430,350**
RADON MITIGATION		LS	1.00	$	-	LS	$	**20,000**
SUBTOTAL- PLUMBING							$	**450,350**
230000 HVAC								
HVAC- EQUIPMENT / CONTROLS / PIPING / SHT METAL / DIFFUSERS / INSULATION		SF	22,650.00	$	80.35	SF	$	**1,819,928**
HVAC MECHANICAL PIPING & INSULATION		LS	1.00	$	-	LS		**INCLUDED**
HVAC CONTROLS	*DDC*	LS	1.00	$	-	LS		**INCLUDED**
TEST & BALANCE		LS	1.00	$	-	LS		**INCLUDED**
COORDINATION DRAWINGS		LS	1.00	$	-	LS		**INCLUDED**
HVAC CONTROLS		LS	1.00	$	-	LS		**INCLUDED**
HYDRONIC SNOW MELT SYSTEM		LS	1.00	$	-	LS		**INCLUDED**
BIM MODELING		LS	1.00	$	-	LS	$	**15,000**
SUBTOTAL- HVAC							$	**1,834,928**
2/230000 MECHANICAL - TOTALS	***HQ BUILDING***						$	**2,285,278**
2/230000 MECHANICAL	***SAR BUILDING***							
224100 PLUMBING								
PLUMBING- FIXTURES / EQUIPMENT / DOMESTIC / STORM / WASTE / VENT		SF	5,942.00	$	26.00	SF	$	**154,492**
BUILDOUT VEHICLE BAY		LS	1.00	$	-	LS		**INCLUDED**
RADON MITIGATION		LS	1.00	$	-	LS	$	**5,000**
SUBTOTAL- PLUMBING							$	**159,492**
230000 HVAC								
HVAC- EQUIPMENT / CONTROLS / PIPING / SHT METAL / DIFFUSERS / INSULATION		SF	5,942.00	$	96.00	SF	$	**570,432**
BUILDOUT VEHICLE BAY		LS	1.00	$	-	LS		**INCLUDED**
HVAC MECHANICAL PIPING & INSULATION		LS	1.00	$	-	LS		**INCLUDED**
HVAC CONTROLS	*DDC*	LS	1.00	$	-	LS		**INCLUDED**
TEST & BALANCE		LS	1.00	$	-	LS		**INCLUDED**
COORDINATION DRAWINGS		LS	1.00	$	-	LS		**INCLUDED**
HVAC CONTROLS		LS	1.00	$	-	LS		**INCLUDED**
HYDRONIC SNOW MELT SYSTEM		LS	1.00	$	-	LS		**INCLUDED**
BIM MODELING		LS	1.00	$	-	LS	$	**5,000**
SUBTOTAL- HVAC							$	**575,432**
2/230000 MECHANICAL - TOTALS	***SAR BUILDING***						$	**734,924**

DESCRIPTION		UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL		TOTAL
260000 ELECTRICAL	***HQ BUILDING***							
261100 ELECTRICAL WORK								
TEMP LIGHT & POWER		SF	22,650.00	$	85.35	SF	$	1,933,178
SECONDARY SERVICE		LS	1.00	$	-	LS		**INCLUDED**
EMERGENCY DIESEL GENERATOR - 350 KW		LS	1.00	$	-	LS		**INCLUDED**
UNDERGROUND DIESEL STORAGE TANK	*72 HOURS*	LS	1.00	$	-	LS		**INCLUDED**
MOTOR & EQUIPMENT CONNECTIONS		LS	1.00	$	-	LS		**INCLUDED**
POWER DISTRIBUTION/BRANCH POWER		LS	1.00	$	-	LS		**INCLUDED**
LIGHTING- FIXTURE ALLOWANCE		LS	1.00	$	-	LS		**INCLUDED**
LIGHTING- FIXTURE INSTALL		LS	1.00	$	-	LS		**INCLUDED**
LIGHTING CONTROLS		LS	1.00	$	-	LS		**INCLUDED**
TRIM OUT/FINAL CONNECTIONS		LS	1.00	$	-	LS		**INCLUDED**
FIRE ALARM SYSTEM		LS	1.00	$	-	LS		**INCLUDED**
SITE LIGHTING/POWER		LS	1.00	$	-	LS		**INCLUDED**
DATA/COMMUNICATIONS- ROUGH IN ONLY		LS	1.00	$	-	LS		**INCLUDED**
ACCESS CONTROL- ROUGH IN ONLY		LS	1.00	$	-	LS		**INCLUDED**
SECURITY SYSTEM- ROUGH IN ONLY		LS	1.00	$	-	LS		**INCLUDED**
AV SYSTEM- ROUGH IN ONLY		LS	1.00	$	-	LS		**INCLUDED**
STATE ELECTRICAL PERMIT		LS	1.00	$	-	LS		**INCLUDED**
HEAT TAPING EXTERIOR SURFACES		LS	1.00	$	-	LS		**INCLUDED**
LIGHTNING PROTECTION		LS	1.00	$	-	LS		**INCLUDED**
BIM MODELING		LS	1.00	$	-	LS		**INCLUDED**
SUBTOTAL- ELECTRICAL							$	1,933,178
260000 ELECTRICAL - TOTALS	***HQ BUILDING***						$	1,933,178
260000 ELECTRICAL	***SAR BUILDING***							
261100 ELECTRICAL WORK								
TEMP LIGHT & POWER		SF	5,942.00	$	84.00	SF	$	499,128
PV ARRAY	*SD REPORT REV 01 - ALLOWANCE*	LS	1.00	$	-	LS	$	65,000
CONDUITS FROM HQ BUILDING - SAR FIRE ALARM & FUTURE LOW VOLT	*SD REPORT REV 01*	LS	1.00	$	-	LS	$	1,500
POWER TO 10,000 GAL STORAGE TANK PUMP	*SD REPORT REV 01*	EA	1.00	$	-	EA	$	15,000
POWER TO DOMESTIC WELL PUMP / TREATMENT SYSTEM	*SD REPORT REV 01*	EA	1.00	$	-	EA	$	25,000
POWER TO FIRE SUPPRESSION PUMP - HQ	*SD REPORT REV 01*	EA	1.00	$	-	EA	$	35,000
BUILDOUT VEHICLE BAY		LS	1.00	$	-	LS		**INCLUDED**
SECONDARY SERVICE		LS	1.00	$	-	LS		**INCLUDED**
MOTOR & EQUIPMENT CONNECTIONS		LS	1.00	$	-	LS		**INCLUDED**
POWER DISTRIBUTION/BRANCH POWER		LS	1.00	$	-	LS		**INCLUDED**
LIGHTING- FIXTURE ALLOWANCE		LS	1.00	$	-	LS		**INCLUDED**
LIGHTING- FIXTURE INSTALL		LS	1.00	$	-	LS		**INCLUDED**
LIGHTING CONTROLS		LS	1.00	$	-	LS		**INCLUDED**
TRIM OUT/FINAL CONNECTIONS		LS	1.00	$	-	LS		**INCLUDED**
FIRE ALARM SYSTEM		LS	1.00	$	-	LS		**INCLUDED**
SITE LIGHTING/POWER		LS	1.00	$	-	LS		**INCLUDED**
DATA/COMMUNICATIONS- ROUGH IN ONLY		LS	1.00	$	-	LS		**INCLUDED**
ACCESS CONTROL- ROUGH IN ONLY		LS	1.00	$	-	LS		**INCLUDED**
SECURITY SYSTEM- ROUGH IN ONLY		LS	1.00	$	-	LS		**INCLUDED**
AV SYSTEM- ROUGH IN ONLY		LS	1.00	$	-	LS		**INCLUDED**
STATE ELECTRICAL PERMIT		LS	1.00	$	-	LS		**INCLUDED**
HEAT TAPING EXTERIOR SURFACES		LS	1.00	$	-	LS		**INCLUDED**
LIGHTNING PROTECTION		LS	1.00	$	-	LS		**INCLUDED**
BIM MODELING		LS	1.00	$	-	LS	$	2,500
SUBTOTAL- ELECTRICAL							$	643,128
260000 ELECTRICAL - TOTALS	***SAR BUILDING***						$	643,128

DESCRIPTION		UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL		TOTAL
270000/ 280000 SPECIAL SYSTEMS	***HQ BUILDING***							
271000 COMMUNICATIONS & DATA SYSTEMS								
WIRING & CABLE- INCL TERMINATIONS		SF	-	$	-	SF		**BY OWNER**
WIRE MANAGEMENT SYSTEM- CABLE TRAYS	IN DIV 260000	LS	1.00	$	-	LS		**INCLUDED**
SUBTOTAL- COMMUNICATIONS & DATA SYSTEMS							$	-
274100 AUDIO VISUAL SYSTEM								
WIRING & CABLE		LS	-	$	-	LS		**BY OWNER**
EQUIPMENT		LS	-	$	-	LS		**BY OWNER**
DEVICES		LS	-	$	-	LS		**BY OWNER**
SUBTOTAL- AUDIO VISUAL SYSTEM							$	-
274150 DISTRIBUTED ANTENNA SYSTEM								
WIRING & CABLE		LS	-	$	-	LS		**BY OWNER**
EQUIPMENT		LS	-	$	-	LS		**BY OWNER**
DEVICES		LS	-	$	-	LS		**BY OWNER**
SUBTOTAL- DISTRIBUTED ANTENNA SYSTEM							$	-
275100 EMERGENCY ALERTING SYSTEM								
WIRING & CABLE		LS	1.00	$	-	LS	$	**115,000**
EQUIPMENT		LS	1.00	$	-	LS		**INCLUDED**
DEVICES		LS	1.00	$	-	LS		**INCLUDED**
SUBTOTAL- EMERGENCY ALERTING SYSTEM							$	**115,000**
281100 SECURITY SYSTEM								
WIRING & CABLE		LS	-	$	-	LS		**BY OWNER**
EQUIPMENT		LS	-	$	-	LS		**BY OWNER**
DEVICES		LS	-	$	-	LS		**BY OWNER**
SUBTOTAL- SECURITY SYSTEM							$	-
281115 ACCESS CONTROL SYSTEM								
WIRING & CABLE		SF	-	$	-	SF		**BY OWNER**
EQUIPMENT		LS	-	$	-	LS		**BY OWNER**
DEVICES		LS	-	$	-	LS		**BY OWNER**
SUBTOTAL- ACCESS CONTROL SYSTEM							$	-
270000 SPECIAL SYSTEMS - TOTALS	***HQ BUILDING***						$	**115,000**

270000/ 280000 SPECIAL SYSTEMS	***SAR BUILDING***							
271000 COMMUNICATIONS & DATA SYSTEMS								
WIRING & CABLE- INCL TERMINATIONS		SF	-	$	-	SF		**BY OWNER**
WIRE MANAGEMENT SYSTEM- CABLE TRAYS	IN DIV 260000	LS	1.00	$	-	LS		**INCLUDED**
SUBTOTAL- COMMUNICATIONS & DATA SYSTEMS							**$**	**-**
274100 AUDIO VISUAL SYSTEM								
WIRING & CABLE		LS	-	$	-	LS		**BY OWNER**
EQUIPMENT		LS	-	$	-	LS		**BY OWNER**
DEVICES		LS	-	$	-	LS		**BY OWNER**
SUBTOTAL- AUDIO VISUAL SYSTEM							**$**	**-**
274150 DISTRIBUTED ANTENNA SYSTEM								
WIRING & CABLE		LS	-	$	-	LS		**BY OWNER**
EQUIPMENT		LS	-	$	-	LS		**BY OWNER**
DEVICES		LS	-	$	-	LS		**BY OWNER**
SUBTOTAL- DISTRIBUTED ANTENNA SYSTEM							**$**	**-**
275100 EMERGENCY ALERTING SYSTEM								
WIRING & CABLE		LS	1.00	$	-	LS	**$**	**35,000**
EQUIPMENT		LS	1.00	$	-	LS		**INCLUDED**
DEVICES		LS	1.00	$	-	LS		**INCLUDED**
SUBTOTAL- EMERGENCY ALERTING SYSTEM							**$**	**35,000**
281100 SECURITY SYSTEM								
WIRING & CABLE		LS	-	$	-	LS		**BY OWNER**
EQUIPMENT		LS	-	$	-	LS		**BY OWNER**
DEVICES		LS	-	$	-	LS		**BY OWNER**
SUBTOTAL- SECURITY SYSTEM							**$**	**-**
281115 ACCESS CONTROL SYSTEM								
WIRING & CABLE		SF	-	$	-	SF		**BY OWNER**
EQUIPMENT		LS	-	$	-	LS		**BY OWNER**
DEVICES		LS	-	$	-	LS		**BY OWNER**
SUBTOTAL- ACCESS CONTROL SYSTEM							**$**	**-**
270000 SPECIAL SYSTEMS - TOTALS	***SAR BUILDING***						**$**	**35,000**

DESCRIPTION		UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL	
310000 EARTHWORK (BUILDING)	***HQ BUILDING***						
312210 EXCAV. & BACKFILL & COMPACT							
15 MIL VAPOR BARRIER		SF	17,903.60	$ 2.35	SF	$	42,073
EXCAVATE BUILDING FOUNDATIONS-MACHINE		CY	1,153.90	$ 22.00	CY	$	25,386
BACKFILL BUILDING FOUNDATIONS - NATIVE MAT'L		CY	792.70	$ 34.00	CY	$	26,952
EXCAVATE BUILDING SLAB-MACHINE		CY	654.50	$ 22.00	CY	$	14,399
UNDERSLAB GRAVEL DRAINAGE COURSE-4"	*INCLUDES FINE GRADING*	CY	221.03	$ 155.00	CY	$	34,260
GEOGRID	*N/A-EXCLUDED*	SY	-	$ -	SY	$	-
DISPOSE EXCESS MATERIAL		CY	1,015.70	$ 28.00	CY	$	28,440
UNSUITABLE SOILS REPLACEMENT	*ALLOWANCE*	LS	1.00	$ 100,000.00	LS	$	100,000
TOTAL - EXCAVATION, BACKFILL & COMPACT						$	271,510
316150 FOUNDATION DRAINAGE SYSTEM							
PERIMETER FOUNDATION DRAINS- 4" PERF PIPING		LF	957.60	$ 28.00	LF	$	26,813
UNDERSLAB DRAINS- 4" PERF PIPING	*N/A-EXCLUDED*	LF	-	$ 28.00	LF	$	-
TOTAL - FOUNDATION DRAINAGE SYSTEM						$	26,813
310000 EARTHWORK (BUILDING) - TOTALS	***HQ BUILDING***					$	298,322
310000 EARTHWORK (BUILDING)	***SAR BUILDING***						
312210 EXCAV. & BACKFILL & COMPACT							
15 MIL VAPOR BARRIER		SF	6,107.20	$ 2.35	SF	$	14,352
EXCAVATE BUILDING FOUNDATIONS-MACHINE		CY	511.50	$ 22.00	CY	$	11,253
BACKFILL BUILDING FOUNDATIONS - NATIVE MAT'L		CY	396.97	$ 34.00	CY	$	13,497
EXCAVATE BUILDING SLAB-MACHINE		CY	148.50	$ 22.00	CY	$	3,267
UNDERSLAB GRAVEL DRAINAGE COURSE-4"	*INCLUDES FINE GRADING*	CY	75.40	$ 155.00	CY	$	11,687
GEOGRID	*N/A-EXCLUDED*	SY	-	$ -	SY	$	-
DISPOSE EXCESS MATERIAL		CY	263.03	$ 28.00	CY	$	7,365
TOTAL - EXCAVATION, BACKFILL & COMPACT						$	61,420
316150 FOUNDATION DRAINAGE SYSTEM							
PERIMETER FOUNDATION DRAINS- 4" PERF PIPING		LF	422.94	$ 28.00	LF	$	11,842
UNDERSLAB DRAINS- 4" PERF PIPING	*N/A-EXCLUDED*	LF	-	$ 28.00	LF	$	-
TOTAL - FOUNDATION DRAINAGE SYSTEM						$	11,842
310000 EARTHWORK (BUILDING) - TOTALS	***SAR BUILDING***					$	73,263

FCI Cost Worksheet June 30, 2023
Project: EMERGENCY SERVICES CAMPUS SCHEMATIC ESTIMATE R4
CBFPD SF 22,650

DESCRIPTION	COMMENTS / SUBCONTRACTOR	UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL		TOTAL
310000 SITE WORK								
312100 SITE PREPARATION								
SOIL/EROSION & SEDIMENT CONTROL-INITIAL SETUP & INSTALL	*SILT TRAPS/INLET PROTECTION/EROSION LOGS*	LS	1.00	$	1,292.00	LS	$	**10,000**
STONE TRACKING PADS	*INSTALL/REMOVE/MAINTAIN*	SF	1,200.00	$	1.95	SF	$	**2,340**
PERIMETER SILT FENCING		LF	1,511.00	$	3.55	LF	$	**5,364**
PERIMETER TEMPORARY FENCING		LF	1,511.00	$	7.00	LF	$	**10,577**
SOIL/EROSION CONTROL-MAINT.		LS	1.00	$	10,500.00	LS	$	**10,500**
DUST / SILICA CONTROL		LS	1.00	$	5,500.00	LS	$	**5,500**
STREET CLEANING		LS	1.00	$	22,500.00	LS	$	**22,500**
SUBTOTAL- SITE PREPARATION							$	**66,781**
312200 MASS EXCAVATION & SITE GRADING								
MOBILIZATION		LS	1.00	$	12,000.00	LS	$	**12,000**
INITIAL SURVEY/BENCH MARKS/GRIDS & LAYOUTS		LS	1.00	$	24,000.00	LS	$	**24,000**
STRIP/STOCKPILE TOPSOIL-7" TH		CY	2,434.23	$	15.00	CY	$	**36,513**
SITE GRADING-CUT TO FILL-AVG 18"		CY	6,259.44	$	35.00	CY	$	**219,081**
SCARIFY & RECOMPACT -PAVEMENT SUB GRADE- 12"	*ASPHALT PAVEMENTS*	SY	3,090.11	$	1.95	SY	$	**6,026**
SCARIFY & RECOMPACT -PAVEMENT SUB GRADE- 12"	*CONCRETE PAVEMENTS & WALKS*	SY	2,073.89	$	1.95	SY	$	**4,044**
SCARIFY & RECOMPACT -PAVEMENT SUB GRADE- 12"	*CONCRETE PAVEMENTS & WALKS - FUTURE PER SD REPORT REV 01*	SY	(319.11)	$	1.95	SY	$	**(622)**
SCARIFY & RECOMPACT -SLAB ON GRADE SUB GRADE- 12"	*CONCRETE CURB & GUTTER & V-PAN*	SY	751.78	$	2.10	SY	$	**1,579**
SCARIFY & RECOMPACT -SURFACE SUB GRADE- 12"	*DECOMPOSED GRANITE SURFACING*	SY	155.89	$	2.10	SY	$	**327**
SCARIFY & RECOMPACT -SURFACE SUB GRADE- 12"	*ADDED DECOMPOSED GRANITE SURFACING - SD REPORT REV 01*	SY	577.78	$	2.10	SY	$	**1,213**
SCARIFY & RECOMPACT -SURFACE SUB GRADE- 12"	*PATIO & GRASS PAVERS*	SY	582.22	$	2.10	SY	$	**1,223**
RE-SPREAD TOPSOIL FROM ON SITE STOCKPILE	*8" DEPTH*	CY	840.63	$	24.00	CY	$	**20,175**
DISPOSE EXCESS TOPSOIL MATERIAL- OFFSITE		CY	1,593.60	$	11.00	CY	$	**17,530**
POT HOLING FOR EXISTING UTILITIES		LS	1.00	$	7,500.00	LS	$	**7,500**
SKID STEER-W/FUEL & MAINT		MO	8.00	$	2,108.00	MO	$	**16,864**
SUBTOTAL- MASS EXCAVATION & GRADING							$	**367,452**
310000 EARTHWORK- TOTALS							$	**434,233**

DESCRIPTION	COMMENTS / SUBCONTRACTOR	UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL	
320000 EXTERIOR IMPROVEMENTS							
312510 ASPHALT PAVING							
ASPHALT PAVMENT- 4" TH	*ONSITE PARKING*	TNS	642.43	$ 270.00	TNS	$	**173,457**
PAVEMENT PATCHING	*CONCRETE PAVING TIE-IN*	SF	600.00	$ 8.00	SF	$	**4,800**
FINE GRADE SUBGRADE	*ONSITE PARKING*	SY	3,090.11	$ 2.10	SY	$	**6,489**
SOIL STERILANT	*ONSITE PARKING*	SY	3,090.11	$ 0.57	SY	$	**1,761**
FINE GRADE SUBGRADE	*CONCRETE PAVING TIE-IN*	SY	66.67	$ 2.10	SY	$	**140**
SOIL STERILANT	*CONCRETE PAVING TIE-IN*	SY	66.67	$ 0.57	SY	$	**38**
PAVEMENT MARKINGS & SIGNAGE		LS	1.00	$ 4,500.00	LS	$	**4,500**
TRAFFIC CONTROL	*CONCRETE PAVING TIE-IN*	LS	1.00	$ 6,000.00	LS	$	**6,000**
SUBTOTAL- ASPHALT PAVING						$	**197,186**
312515 PAVEMENT BASE MATERIAL							
ASPHALT PAVEMENT BASE COURSE- 8" OF CLASS 6 ROAD BASE	*ASPHALT*	CY	828.15	$ 80.00	CY	$	**66,252**
ASPHALT PAVEMENT BASE COURSE- 8" OF CLASS 6 ROAD BASE	*STREET PATCH BACK*	CY	17.87	$ 80.00	CY	$	**1,429**
PAVEMENT BASE COURSE- 6" OF CLASS 6 ROAD BASE	*ON SITE WALKS*	CY	174.58	$ 80.00	CY	$	**13,966**
PAVEMENT BASE COURSE- 6" OF CLASS 6 ROAD BASE	*ON SITE WALKS - FUTURE PER SD REPORT REV 01*	CY	(63.82)	$ 80.00	CY	$	**(5,106)**
PAVEMENT BASE COURSE- 6" OF CLASS 6 ROAD BASE	*DUMPSTER PAD*	CY	23.22	$ 80.00	CY	$	**1,858**
PAVEMENT BASE COURSE- 6" OF CLASS 6 ROAD BASE	*CONCRETE PAVING*	CY	210.13	$ 80.00	CY	$	**16,811**
PAVEMENT BASE COURSE- CLASS 6 ROAD BASE- 6" THICK	*CURB & GUTTER*	CY	92.93	$ 80.00	CY	$	**7,435**
PAVEMENT BASE COURSE- 6" OF CLASS 6 ROAD BASE	*NEW XFORMER PAD*	CY	1.42	$ 80.00	CY	$	**114**
PAVEMENT BASE COURSE- 6" OF CLASS 6 ROAD BASE	*NEW GENERATOR PAD*	CY	5.42	$ 80.00	CY	$	**434**
PAVEMENT BASE COURSE- 6" OF CLASS 6 ROAD BASE	*V-PAN*	CY	26.44	$ 80.00	CY	$	**2,116**
PAVEMENT BASE COURSE- 6" OF CLASS 6 ROAD BASE	*DECOMPOSED GRANITE SURFACING*	CY	31.18	$ 80.00	CY	$	**2,494**
PAVEMENT BASE COURSE- 6" OF CLASS 6 ROAD BASE	*PATIO & GRASS PAVERS*	CY	116.44	$ 80.00	CY	$	**9,316**
SUBTOTAL- PAVEMENT BASE MATERIAL						$	**117,118**

DESCRIPTION	COMMENTS / SUBCONTRACTOR	UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL
312550 SITE CONCRETE						
WALL FOOTINGS-24" W X 12" H	***DUMPSTER ENCLOSURE***	**LF**	**37.00**			
FORM/STRIP WALL FOOTINGS		SF	74.00	$ 8.10 SF	$	**599**
SHEAR KEYWAY-WALL FOOTINGS		LF	37.00	$ 3.05 LF	$	**113**
REBAR TO WALL FOOTINGS		TN	0.11	$ 2,250.00 TN	$	**241**
CONCRETE TO WALL FOOTINGS		CY	3.29	$ 325.00 CY	$	**1,069**
WALL FOOTINGS-24" W X 12" H	***GENERATOR ENCLOSURE***	**LF**	**41.00**			
FORM/STRIP WALL FOOTINGS		SF	82.00	$ 8.10 SF	$	**664**
SHEAR KEYWAY-WALL FOOTINGS		LF	41.00	$ 3.05 LF	$	**125**
REBAR TO WALL FOOTINGS		TN	0.12	$ 2,250.00 TN	$	**267**
CONCRETE TO WALL FOOTINGS		CY	3.64	$ 325.00 CY	$	**1,184**
STEM WALLS -32" H X 14" TH	***DUMPSTER ENCLOSURE***	**LF**	**37.00**			
FORM/STRIP STEM WALLS		SF	185.00	$ 8.00 SF	$	**1,480**
REBAR TO STEM WALLS- 125#/CY		TN	0.31	$ 2,325.00 TN	$	**717**
POINT & PATCH STEM WALLS		SF	92.50	$ 0.97 SF	$	**89**
CONCRETE TO STEM WALLS		CY	4.93	$ 325.00 CY	$	**1,603**
STEM WALLS -32" H X 14" TH	***GENERATOR ENCLOSURE***	**LF**	**41.00**			
FORM/STRIP STEM WALLS		SF	205.00	$ 8.00 SF	$	**1,640**
REBAR TO STEM WALLS- 125#/CY		TN	0.34	$ 2,325.00 TN	$	**794**
POINT & PATCH STEM WALLS		SF	102.50	$ 0.97 SF	$	**99**
CONCRETE TO STEM WALLS		CY	5.47	$ 325.00 CY	$	**1,777**
CONCRETE EQUIPMENT PAD- 8" THICK* **	***DUMPSTER PAD***					
CONCRETE TO PAVEMENT		CY	27.23	$ 325.00 CY	$	**8,849**
REBAR TO CONC PAVEMENT-#4 AT 12" OC /EW	*1.65#/SF*	TN	0.86	$ 2,250.00 TN	$	**1,940**
EDGE FORMS-8"		LF	218.00	$ 7.60 LF	$	**1,657**
FINISH CONCRETE EQUIPMENT PAD		SF	1,045.00	$ 0.69 SF	$	**726**
CURE & PROTECT EQUIPMENT PAD		SF	1,045.00	$ 0.37 SF	$	**383**
CONCRETE EQUIPMENT PAD- 8" THICK* **	***GENERATOR PAD***					
CONCRETE TO 8" TH PAVEMENT		CY	6.66	$ 325.00 CY	$	**2,165**
REBAR TO CONC PAVEMENT-#4 AT 12" OC /EW	*1.65#/SF*	TN	0.20	$ 2,250.00 TN	$	**453**
EDGE FORMS-8"		LF	82.00	$ 7.60 LF	$	**623**
FINISH CONCRETE EQUIPMENT PAD		SF	244.00	$ 0.69 SF	$	**169**
CURE & PROTECT EQUIPMENT PAD		SF	244.00	$ 0.37 SF	$	**89**
CONCRETE EQUIPMENT PAD- 6" THICK* **	***TRANSFORMER PAD***					
CONCRETE TO 6" TH PAVEMENT		CY	1.24	$ 325.00 CY	$	**404**
REBAR TO CONC PAVEMENT-#4 AT 12" OC /EW	*1.65#/SF*	TN	0.05	$ 2,250.00 TN	$	**119**
EDGE FORMS-6"		LF	24.00	$ 7.60 LF	$	**182**
FINISH CONCRETE EQUIPMENT PAD		SF	64.00	$ 0.69 SF	$	**44**
CURE & PROTECT EQUIPMENT PAD		SF	64.00	$ 0.37 SF	$	**23**

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SF 22,650

DESCRIPTION	COMMENTS / SUBCONTRACTOR	UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL		TOTAL
320000 EXTERIOR IMPROVEMENTS								
312550 SITE CONCRETE								
CONCRETE PAVING- 8" THICK********								
CONCRETE TO PAVEMENT		CY	246.38	$	330.00	CY	$	**81,306**
ADD FOR FIBER MESH REINFORCING		CY	246.38	$	8.40	CY	$	**2,070**
REBAR TO CONC PAVING- #4 BARS AT 16" OC-1 LAYER	*EPOXY COATED*	TN	7.09	$	3,625.00	TN	$	**25,709**
FINE GRADE SUBGRADE		SF	9,456.00	$	0.33	SF	$	**3,073**
EDGE FORMS-8"		LF	1,525.00	$	8.10	LF	$	**12,353**
FINISH CONC PAVEMENT- LT BROOM FIN		SF	9,456.00	$	0.70	SF	$	**6,619**
CURE & PROTECT CONC PAVEMENT		SF	9,456.00	$	0.40	SF	$	**3,782**
ADD FOR UNDERSLAB INSULATION-2"		SF	3,350.00	$	6.00	SF	$	**20,100**
CONCRETE WALKS- 5" THICK********	***ON SITE PEDESTRIAN WALKS***							
CONCRETE TO SIDEWALKS		CY	128.31	$	337.50	CY	$	**43,306**
ADD FOR FIBER MESH REINFORCING		CY	128.31	$	8.40	CY	$	**1,078**
ADD FOR COLORED CONCRETE		CY	128.31	$	90.00	CY	$	**11,548**
REBAR TO SIDEWALKS	*N/A*	TN	-	$	2,400.00	TN	$	-
FINE GRADE SUBGRADE		SF	7,856.00	$	0.34	SF	$	**2,701**
EDGE FORMS-5"		LF	1,720.00	$	7.90	LF	$	**13,588**
EXPANSION JOINTS		LF	392.80	$	10.38	LF	$	**4,075**
SCORE JOINTS		LF	1,571.20	$	3.05	LF	$	**4,792**
FINISH SIDEWALKS- LT BROOM FIN		SF	7,856.00	$	0.55	SF	$	**4,321**
CURE & PROTECT		SF	7,856.00	$	0.26	SF	$	**2,062**
ADD FOR STAMPED/TEXTURED FINISH	*N/A-EXCLUDED*	SF	-	$	3.10	SF	$	-
CONCRETE WALKS- 5" THICK********	***FUTURE - SD REPORT REV 01 CREDIT***							
CONCRETE TO SIDEWALKS		CY	(46.91)	$	337.50	CY	$	**(15,832)**
ADD FOR FIBER MESH REINFORCING		CY	(46.91)	$	8.40	CY	$	**(394)**
ADD FOR COLORED CONCRETE		CY	(46.91)	$	90.00	CY	$	**(4,222)**
REBAR TO SIDEWALKS	*N/A*	TN	-	$	2,400.00	TN	$	-
FINE GRADE SUBGRADE		SF	(2,872.00)	$	0.34	SF	$	**(987)**
EDGE FORMS-5"		LF	(718.00)	$	7.90	LF	$	**(5,672)**
EXPANSION JOINTS		LF	(143.60)	$	10.38	LF	$	**(1,490)**
SCORE JOINTS		LF	(574.40)	$	3.05	LF	$	**(1,752)**
FINISH SIDEWALKS- LT BROOM FIN		SF	(2,872.00)	$	0.55	SF	$	**(1,580)**
CURE & PROTECT		SF	(2,872.00)	$	0.26	SF	$	**(754)**
ADD FOR STAMPED/TEXTURED FINISH	*N/A-EXCLUDED*	SF	-	$	3.10	SF	$	-
CONCRETE CURB & GUTTER		LF	1,394.00	$	30.00	LF	$	**41,820**
CONCRETE V-PAN	*6' WIDTH*	LF	170.00	$	41.00	LF	$	**6,970**
LIGHT POLE BASES-CONC		EA	5.00	$	1,500.00	EA	$	**7,500**
LIGHT BOLLARD BASES-CONC		EA	10.00	$	750.00	EA	$	**7,500**
CONCRETE CLEANOUT		PULLS	1.00	$	665.00	PULL	$	**665**
SUBTOTAL- SITE CONCRETE							$	**304,544**
312650 STORM SEWER								
STORM PIPING - 12" HDPE		LF	88.00	$	95.00	LF	$	**8,360**
STORM PIPING - 18" DUAL WALL HDPE		LF	480.00	$	105.00	LF	$	**50,400**
CULVERT-24" HDPE		LF	220.00	$	105.00	LF	$	**23,100**
CURB INLET STRUCTURE		EA	6.00	$	5,500.00	EA	$	**33,000**
AREA INLET STRUCTURE		EA	4.00	$	5,500.00	EA	$	**22,000**
OUTLET STRUCTURE		EA	2.00	$	5,500.00	EA	$	**11,000**
ROOF DRAIN PIPING		LS	1.00	$	25,000.00	LS	$	**25,000**
REWORK EXG DRAINAGE DITCH		LS	1.00	$	8,500.00	LS	$	**8,500**
GRANULAR DRAINAGE MATERIAL	*DETENTION PONDS*	CY	124.26	$	85.00	CY	$	**10,562**
SUBTOTAL- STORM SEWER							$	**191,922**

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SF 22,650

DESCRIPTION	COMMENTS / SUBCONTRACTOR	UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL		TOTAL
320000 EXTERIOR IMPROVEMENTS								
312660 SANITARY SEWER								
LIFT STATION		EA	1.00	$	45,000.00	EA	$	**45,000**
SANITARY SEWER MANHOLE		EA	1.00	$	12,500.00	EA	$	**12,500**
4" FORCE MAIN-HDPE		LF	710.00	$	155.00	LF	$	**110,050**
6" SANITARY-SDR35		LF	385.00	$	98.00	LF	$	**37,730**
SAND/OIL INTERCEPTOR		EA	2.00	$	22,000.00	EA	$	**44,000**
SUBTOTAL- SANITARY SEWER							$	**249,280**
312665 WATER SERVICE								
WET TAP TO EX MAIN		EA	-	$	2,650.00	EA	$	-
FIRE WATER SERVICE- 2" HDPE		LF	60.00	$	75.00	LF	$	**4,500**
FIRE WATER SERVICE- 6" C900		LF	345.00	$	105.00	LF	$	**36,225**
FIRE WATER SERVICE- 8" C900		LF	720.00	$	160.00	LF	$	**115,200**
6" DUCTILE IRON FIRE & DOMESTIC WATER RISER		EA	2.00	$	3,200.00	EA	$	**6,400**
FIRE HYDRANT - WET		EA	1.00	$	8,200.00	EA	$	**8,200**
UNDERGROUND FIRE WATER STORAGE TANK / PUMP / PIPING - 10,000 GAL	*TO FUTURE FIRE TRAINING BUILDING*	EA	1.00	$	75,000.00	EA	$	**75,000**
UNDERGROUND FIRE WATER STORAGE TANK / PUMP / PIPING - 24,000 GAL	*TO HQ BUILDING*	EA	1.00	$	165,000.00	EA	$	**165,000**
DOMESTIC / FIRE WATER WELL / PUMP / TREATMENT SYSTEM	*TO HQ BUILDING*	EA	1.00	$	125,000.00	EA	$	**125,000**
DRY FIRE HYDRANT / COLLECTION SYSTEM / PIPING	*SLATE RIVER*	EA	1.00	$	35,000.00	EA	$	**35,000**
SUBTOTAL- WATER SERVICE							$	**570,525**
312675 NATURAL GAS SERVICE								
GAS LINE - TRENCH & BACKFILL ONLY	*PIPING BY ATMOS*	LF	326.00	$	23.00	LF	$	**7,498**
GAS LINE - BORING		LF	100.00	$	175.00	LF	$	**17,500**
SUBTOTAL- NATURAL GAS SERVICE							$	**24,998**
312685 SITE ELECTRICAL								
SITE LIGHTING-TRENCH & BACKFILL		LF	1,500.00	$	20.00	LF	$	**30,000**
TRENCH & BACKFILL - FIRE ALARM SERVICE & FUTURE LOW VOLT TO SAR BUILDING	*SD REPORT REV 01*	LF	30.00	$	20.00	LF	$	**600**
SITE ELECTRIC & TELECOM SERVICE-TRENCH & BACKFILL		LF	916.00	$	20.00	LF	$	**18,320**
RAISE EXG ELEC VAULT		EA	1.00	$	5,000.00	EA	$	**5,000**
SUBTOTAL- SITE ELECTRICAL							$	**53,920**

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SF 22,650

DESCRIPTION	COMMENTS / SUBCONTRACTOR	UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL		TOTAL
320000 EXTERIOR IMPROVEMENTS								
312875 MISCELLANEOUS SITE IMPROVEMENTS								
SITE FURNISHINGS - BENCHES		EA	9.00	$ 2,200.00	EA	$		**19,800**
SITE FURNISHINGS - PICNIC TABLE SET	*N/A-EXCLUDED*	EA	-	$ 7,200.00	EA	$		-
SITE FURNISHINGS - BIKE RACKS		EA	4.00	$ 800.00	EA	$		**3,200**
SITE FURNISHINGS - BIKE SERVICE STATION		EA	1.00	$ 1,800.00	EA	$		**1,800**
SITE FURNISHINGS - TRASH/RECYCLING RECEPTACLES	*BEAR-PROOF*	EA	2.00	$ 1,400.00	EA	$		**2,800**
EXTERIOR MONUMENT SIGN-FOUNDATION & VENEER		EA	1.00	$ 11,000.00	EA	$		**11,000**
STONE RETAINING WALL		LF	401.00	$ 150.00	LF	$		**60,150**
SUBTOTAL- MISC. SITE IMPROVEMENTS							$	**98,750**
312900 LANDSCAPING & IRRIGATION								
FINE GRADE LS AREAS		SF	31,300.00	$ 0.10	SF	$		**3,130**
TREES		EA	30.00	$ 555.00	EA	$		**16,650**
BOULDER		EA	60.00	$ 555.00	EA	$		**33,300**
SHRUBS/ORN GRASSES		EA	128.00	$ 53.00	EA	$		**6,784**
LANDSCAPE SYSTEM SLEEVING		LS	1.00	$ 3,300.00	LS	$		**3,300**
NATURE PLAY AREA		LS	1.00	$ 15,000.00	LS	$		**15,000**
SEEDING		SF	29,439.00	$ 0.65	SF	$		**19,135**
PERENNIAL GROUNDCOVER		SF	4,437.00	$ 5.50	SF	$		**24,404**
DECOMPOSED GRANITE		SF	1,403.00	$ 5.50	SF	$		**7,717**
DECOMPOSED GRANITE	*ADDED - SD REPORT REV 01*	SF	5,200.00	$ 5.50	SF	$		**28,600**
ROCK MULCH		SF	1,861.00	$ 6.50	SF	$		**12,097**
PATIO PAVERS		SF	2,716.00	$ 18.00	SF	$		**48,888**
GRASS PAVERS		SF	2,524.00	$ 18.00	SF	$		**45,432**
LANDSCAPE IRRIGATION SYSTEM		SF	29,439.00	$ 2.00	SF	$		**58,878**
SUBTOTAL- LANDSCAPING & IRRIGATION							$	**323,314**
310000 EXTERIOR IMPROVEMENTS - TOTALS							$	**2,131,557**

A. Project Information

1. Project type: Construction of (2) new buildings and associated site improvements.
    a. HQ Building Area: 22,650 SF
    b. SAR Building Area: 5,942 SF
    c. Site Development Area: 2.40 Acres

2. Estimated construction schedule: 15 months
    a. Start date: Spring 2024
    b. Completion: Summer 2025

B. General Clarifications

1. This estimate is based on the following documents:
    a. FINAL Schematic Design Package 01, REV 01 by BG+co/TCA dated 6/14/2023 (HQ and Site)
    b. FINAL Schematic Design Package 02, REV 01 by BG+co/TCA dated 6/14/2023 (SAR)
    c. Geotechnical Study by Cesare/CMT dated 12/15/2022

2. This estimate represents specifically identified construction costs only. Therefore, all other costs identified as “Owner’s Costs” are not included. The following items are considered Owner’s Costs:

    a. Owner administrative costs or fees.
    b. Program management/Owner Representative fees or reimbursables.
    c. Materials testing or inspection fees.
    d. Development fees.
    e. Legal fees or expenses.
    f. Owner’s contingency.
    g. Design fees (arch/civil/structural/MEP/landscaping/equipment).
    h. Artwork
    i. F.F. & E (Furniture, Fixtures, and Equipment)
    j. Escalation

3. The majority of the work is assumed to take place during the hours of 6:00 AM to 5:00 PM.

4. FCI has included a 3.00% construction contingency which would be carried at the same rate into the GMP. FCI has not included estimating contingency as it is being carried by owner.

5. Costs for general requirements and preconstruction fee have been distributed across each category within the estimate in an accounting-only manner (specifically as a percentage of the total project in each respective column).

6. Cost to buildout SAR vehicle bay (previously add alternate) has been included in base bid per owner's direction.

7. This estimate reflects the following changes:
    a. Add alternates have been added for the following:
        i. Diesel-powered fire pump in lieu of electrical (located in HQ building)
        ii. Add vehicle exhaust source capture in SAR building
        iii. Geothermal system in lieu of current mechanical system
    b. Added electric fire pump at HQ building to serve HQ and SAR buildings
    c. Moved PV array at SAR building from add alternate to base bid
    d. Add conduits between SAR building and HQ building for fire alarm and future low volt
    e. Moved 10,000 gallon fire water storage tank and pump to serve future fire training building from add alternate to base bid
    f. Added 24,000 gallon underground fire water storage tank and piping
    g. Added domestic water treatment system and pumps
    h. Added dry hydrant – to collect from Slate River
    i. Deducted concrete sidewalk per SD report (future)
    j. Added soft surface trail per SD report
    k. Added allowance for accessible fire line chase between buildings.

Earthwork & Site Improvements

8. FCI has included (1) sanitary sewer lift station per the provided narrative.

9. Asphalt has been included as 4" thick in lieu of 3".

10. It is assumed that native soils can be utilized for site grading to achieve hardscape elevations. FCI assumes native soils will be reallocated throughout the site and that no import of fill will be required. Once grading is complete, subgrade will be scarified and recompacted and topped with class 6 base course prior to concrete or asphalt.

11. Stockpiling and respreading of topsoil to 8" thickness at planted areas has been included.

12. Winter conditions for foundations have not been included as it is assumed that foundations will be performed in the summer months. Temporary heating of masonry veneer and interiors in the amount of $195,000 have been included.

Structure

13. Per geotechnical report, building foundations and slabs are to bear on native soils. However, a quantity of soil replacement will be required at HQ due to the known existence of manmade fill which is unsuitable for use under building. FCI has included an allowance of $100,000 to replace soil as necessary.

14. 3" rigid insulation has been included under entire footprint of HQ and SAR buildings as well as snowmelted concrete aprons as indicated in site narrative.

Exterior Building Assemblies

15. Windows at HQ building have been included as a combination of composite triple-pane and curtainwall triple-pane in order to comply with the anticipated energy code. All windows at SAR building have been included as storefront double-pane.

16. Composite girt system at HQ building has been included as Smartci Green Girt.

17. Siding at HQ building has been included as Resysta Trugrain, factory finished. Alternates for metal panels and fiber cement have been offered per building elevations.

Interior Construction/Finishes

18. Showers at both buildings have been included with tile floors and walls and glass doors. All showers include Schluter Kerdi waterproofing system.

19. Add Alternate to buildout SAR Training/Mission area includes carpet tile flooring and resilient base per owner's direction.

20. Mirrors at HQ and SAR buildings have been included as framed units.

Specialties

21. Interior signage (restrooms, room signs, and egress) has been included. FCI has also included a building dedication plaque and allowance for exterior building letters and symbols. Monument sign (1 each) is by owner, however FCI has included superstructure (foundation, framing, façade).

22. Fireman's pole and training hatch have been included.

23. FCI has included site furnishings (benches, tables, chairs, trash receptacles, and bike racks).

24. All items in sleeping rooms are assumed to be part of FF&E package by owner.

25. FCI has included all appliances, fire extinguishers, and visual display boards. Smart boards are assumed to be by owner.

26. Search and Rescue and Fire Station symbol signs have been included.

Fire Suppression Systems

27. Fire suppression systems have been included as follows:
    a. HQ building has been included as a wet/dryp-pipe system with an electric pump per provided narrative.
    b. SAR building has been included as a wet/dry-pipe system per provided narrative.

Plumbing & HVAC Systems

28. Per the mechanical narrative, SAR building includes heating and ventilation only. Conditioned air has been included only in the IT room.

29. Suspended air cleaners have been included at SAR building. Vehicle source-capture system has been included at HQ building only.

30. An allowance of $25,000 has been included for radon mitigation for both buildings.

Electrical & Low-Volt Systems

31. A budget of $115,000 has been included for alerting system.

32. Raceways/conduit have been included for data cabling, access control, A/V, and CCTV systems. Cabling, devices, terminations, and equipment is by owner. FCI has included electrified hardware and card readers for access control however.

33. An add alternate has been provided to install a photovoltaic array on the HQ building roof. The allowance of $250,000 will provide approximately 75KW of capacity and cover an area of 3,750 SF. The capacity of this system will need to be clarified by the design team to ensure the best value.

Exclusions

1. Unloading, handling, or installation of Owner/User provided materials or equipment.
2. Sales tax; project is exempt.
3. Davis-Bacon or prevailing wages.
4. Telephone/data equipment (telephone switching, handsets, PBX units, computers, network servers, printers, scanners, etc.).
5. Cable or satellite TV cabling or equipment.
6. Third-party commissioning costs.
7. Moisture mitigation of concrete slab; high RH adhesives have been included.
8. Air & water infiltration testing; by owner.
9. Blower door testing; by owner.
10. Standalone exterior wall mockup.
11. Gas line; by Atmos Energy.
12. Climbing wall, equipment, or rappelling equipment; by owner.
13. Distributed antenna system or radios; by owner.
14. Data cabling, terminations, or equipment; by owner.
15. Cabling, head-end equipment, or integration of access control system; by owner.
16. CLT decking.
17. Exercise equipment; by owner.
18. Geotextile fabric; not indicated in documents.
19. Housing building or associated site improvements.
20. Fire training building or associated site improvements, other than underground fire water storage tank and pump.
21. Costs associated with LEED; assumed to not be required.
22. Photovoltaic array at HQ building.
23. Distributed antenna system (Emergency Responder Radio Coverage); by owner.
24. Onsite sewage treatment system.

End of Clarifications & Assumptions.

Crested Butte Fire Protection
Estimated Cash Flow

Month	Hard Construction (FCI)	Hard Construction (Other)	Soft Costs & Land
June-23			$ 25,800
July-23			$ 240,000
August-23			$ 45,000
September-23			$ 45,000
October-23			$ 60,000
November-23			$ 65,000
December-23			$ 75,000
January-24		$ 400,000	$ 100,000
February-24		$ 10,000	$ 400,000
March-24		$ 10,000	$ 85,000
April-24	$ 50,000	$ 310,000	$ 85,000
May-24	$ 125,000	$ 590,000	$ 85,000
June-24	$ 1,200,000	$ 210,000	$ 85,000
July-24	$ 1,500,000	$ 160,000	$ 85,000
August-24	$ 600,000	$ 160,000	$ 85,000
September-24	$ 850,000	$ 110,000	$ 85,000
October-24	$ 1,150,000	$ 110,000	$ 85,000
November-24	$ 1,500,000	$ 110,000	$ 85,000
December-24	$ 1,700,000	$ 110,000	$ 85,000
January-25	$ 1,850,000	$ 110,000	$ 85,000
February-25	$ 2,500,000	$ 110,000	$ 85,000
March-25	$ 1,950,000	$ 110,000	$ 85,000
April-25	$ 1,700,000	$ 185,000	$ 85,000
May-25	$ 1,500,000	$ 125,000	$ 85,000
June-25	$ 1,494,000	$ 310,000	$ 85,000
July-25	$ 1,250,000	$ 145,000	$ 85,000
August-25	$ 1,430,000	$ 235,000	$ -
September-25	$ 400,000	$ 172,086	$ -
October-25	$ 1,015,000		$ -
Total	**$ 23,764,000**	**$ 3,792,086**	**$ 2,500,800**
2023 Total	$ -	$ -	$ 555,800

2024 1st Half	$	1,375,000	$	1,530,000	$	840,000
2024 Total	$	8,675,000	$	2,290,000	$	1,350,000
2025 Total	$	15,089,000	$	1,502,086	$	595,000

District

	MONTHLY TOTAL		INVESTMENT MATURITIES & INCOME		BALANCE REMAINING
$	**25,800**	$	72,261	$	27,460,592
$	**240,000**	$	24,000	$	27,244,592
$	**45,000**	$	74,471	$	27,274,063
$	**45,000**	$	21,000	$	27,250,063
$	**60,000**	$	26,000	$	27,216,063
$	**65,000**	$	304,786	$	27,455,849
$	**75,000**			$	27,380,849
$	**500,000**			$	26,880,849
$	**410,000**	$	200,053	$	26,670,902
$	**95,000**	$	-	$	26,575,902
$	**445,000**	$	103,941	$	26,234,843
$	**800,000**	$	103,940	$	25,538,783
$	**1,495,000**	$	200,917	$	24,244,700
$	**1,745,000**	$	75,000	$	22,574,700
$	**845,000**	$	160,000	$	21,889,700
$	**1,045,000**	$	-	$	20,844,700
$	**1,345,000**	$	80,000	$	19,579,700
$	**1,695,000**	$	240,000	$	18,124,700
$	**1,895,000**	$	-	$	16,229,700
$	**2,045,000**	$	-	$	14,184,700
$	**2,695,000**	$	240,000	$	11,729,700
$	**2,145,000**	$	-	$	9,584,700
$	**1,970,000**	$	80,000	$	7,694,700
$	**1,710,000**	$	80,000	$	6,064,700
$	**1,889,000**	$	-	$	4,175,700
$	**1,480,000**	$	-	$	2,695,700
$	**1,665,000**	$	-	$	1,030,700
$	**572,086**	$	-	$	458,614
$	**1,015,000**	$	-	$	(556,386)
$	**30,056,886**	**$**	**2,086,369**		
$	555,800	$	522,518		

$	3,745,000	$	608,851
$	12,315,000	$	1,163,851
$	17,186,086	$	400,000

Updated 7-05-23

	CBFPD NEW STATION	Original Budget	Budget Revisions	Conceptual Budget 2.0	Commitments	Previously Billed to date	Draw No 25 June 2023	Cost to Date	Percent Complete	Cost to Complete	NOTES
	SOFT COSTS										
12	Water/Sewer Fees	$0	$250,000	$250,000	$175,000	$0		$0	0%	$250,000	
13	Gas Fees	$25,000		$25,000		$0		$0	0%	$25,000	
14	Electric Fees	$25,000	$25,000	$50,000		$0		$0	0%	$50,000	
15	Comcast/CenturyLink Connection Fees	$15,000		$15,000		$0		$0	0%	$15,000	
16	ROW & CDOT fees	$0	$5,000	$5,000		$0		$0	0%	$5,000	CDOT
17	Bldg Permits & Fire Impact Fee	$200,000		$200,000		$3,788		$3,788	2%	$196,212	County
18	Traffic Study	$0	$13,000	$13,000		$12,920		$12,920	99%	$80	McDowell Eng
19	Soils/Geotechnical/Geothermal	$7,500	$5,000	$12,500		$5,524	$5,600.00	$11,124	89%	$1,376	Cesare/Panterra
20	Surveying	$5,000		$5,000		$0		$0	0%	$5,000	JVA
21	Planning/Entitlements	$20,000	$50,000	$83,161		$83,161		$83,161	100%	($0)	BG/TCA
22	Design (Arch, Struct, MEP)	$1,000,000	$600,000	$1,600,000		$738,438		$738,438	46%	$861,562	BG/TCA
22a	Modular Study	$0	$0	$0				$0	#DIV/0!	$0	N/A
23	Civil Engineering	incld		$0		$0		$0	0%	$0	JVA
24	Wetlands Consultant	$10,000	$5,000	$15,000		$1,680		$1,680	11%	$13,320	Bio-Environs
25	3rd Party Insp/Material Testing	$100,000		$100,000		$0		$0	0%	$100,000	Cesare
26	Commissioning	$25,000	$5,000	$30,000		$0		$0	0%	$30,000	$0.5
27	Monument Signage	$20,000		$20,000		$0		$0	0%	$20,000	
28	IT/Low Voltage	$125,000		$125,000		$0		$0	0%	$125,000	
29	CMGC	$50,000	($30,000)	$20,000		$20,000		$20,000	100%	$0	FCI
30	Project Mgmt	$300,000		$300,000		$63,231		$63,231	21%	$236,769	GDA
31	Condo Map	$25,000		$25,000		$0		$0	0%	$25,000	
32	Legal Costs	$20,000		$20,000		$3,327		$3,327	17%	$16,673	
33	Financing Costs	$300,000	($300,000)	$0		$0		$0	0%	$0	net of bond proceeds
34	Insurance/PP Bond	$50,000		$50,000		$0		$0	0%	$50,000	1.20%
35	Reimburseables	$92,900		$92,900		$3,374		$3,374	4%	$89,526	4%
36	Soft Cost Contingency	$193,232	$197,500	$390,732		$0		$0	0%	$390,732	8%
	Subtotal Soft Costs	**$2,608,632**	**$825,500**	**$3,447,293**	**$175,000**	**$935,444**	**$5,600.00**	**$941,044**	**27%**	**$2,506,249**	
	HARD COSTS										
37	Hard Construction Fire/EMS	$14,497,086	$1,918,459	$16,415,545		$0		$0	0%	$16,415,545	6/30/23 FCI SD Estimate
38	Hard Construction SAR	$4,646,972	($645,523)	$4,001,449		$0		$0	0%	$4,001,449	6/30/23 FCI SD Estimate
39	Accepted VE	$0		$0		$0		$0	#DIV/0!	$0	
40	Sitework	$2,779,791	$554,389	$3,334,180		$0		$0	0%	$3,334,180	6/30/23 FCI SD Estimate
41	Housing	$1,835,431	($635,431)	$1,200,000		$0		$0	0%	$1,200,000	
42	Fitness Equipment	$50,000	$25,000	$75,000		$0		$0	0%	$75,000	
43	Electrical Car Charging Stations	$15,000		$15,000		$0		$0	0%	$15,000	
44	FF&E	$250,000	($50,000)	$200,000		$0		$0	0%	$200,000	
45	Window Coverings/FE	$35,000		$35,000		$0		$0	0%	$35,000	
46	OSE	$125,000		$125,000		$0		$0	0%	$125,000	
47	Hard Contingency	$1,938,742	$283,860	$2,222,603		$0		$0	0%	$2,222,603	8.75%
	Subtotal Hard Costs	**$26,173,022**	**$1,450,754**	**$27,623,777**	**$0**	**$0**	**$0.00**	**$0**	**0%**	**$27,623,777**	
	Total Soft & Hard Costs	**$28,781,654**	**$2,276,254**	**$31,071,070**	**$175,000**	**$935,444**	**$5,600**	**$941,044**	**3%**	**$30,130,026**	**Does not include Spann Land Costs**

Crested Butte Fire Protection District

NEW EMERGENCY SERVICES CAMPUS

CR 317 and Slate River, Gunnison County, CO (North Crested Butte)

FINAL Schematic Design Package 01

Central Administration, Fire, and Emergency Medical Services (EMS)

Project No. 22033

14 June 2023

Revision No.	Date	Description
0	February 08, 2023	Original Submittal, No highlight
1	June 14, 2023	Misc. changes highlighted in yellow

BG+co.
Architecture
Interior Design
Project Management

622 Rood Avenue
Grand Junction, CO 81501
970-242-1058 office

BLYTHE GROUP + co.

TCA
ARCHITECTURE + PLANNING + DESIGN

Table of Contents

1. Project Description

The Crested Butte Fire Protection District (CBFPD) intends to develop a new emergency services campus on its "Spann Subdivision Exemption Parcel" located in Gunnison County North of the Town of Crested Butte. The new campus will include a total of two (2) buildings which will be permitted separately and therefore are separated into their own reports. This report (Schematic Design Package 01) covers the primary building on the new campus and site work for the entire campus.

The new Central Administration, Fire, and Emergency Services (referred to hereafter as HQ) will house most primary functions of the CBFPD including but not limited to the following:

- District administrative/public functions – Spaces and offices for public interaction functions and personnel such as the lobby, training room, meeting room, and fire prevention offices
- Employee / Crew Living Quarters – Spaces that house the functions of the on-duty crew through their shift (no public spaces). Functions include sleeping areas, showers, fitness room, workspace, and a kitchen and day room.
- Equipment Bays and Related Support Spaces – Includes a separate bay area for ambulance equipment, another bay area for fire apparatus/equipment, a maintenance bay, and accessory support spaces related to each such.

The site is made up of two (2) parcels which are in Gunnison County CO. Both parcels are owned by the CBFPD. A subdivision process with Gunnison County will be undertaken to vacate the existing property line between the two properties as well as create a new property line running down the center of the Slate River. At the conclusion of this process, the site will be made up of two (2) parcels with the larger being on the SW side of Slate River and a smaller on the NW/E side of Slate River. All new work occurs on the larger parcel.

The Admin building is the largest structure and is located along the western boundary of the larger parcel paralleling CR 317. The site development work will be included in its bid package and therefore included in this Report.

The project will be constructed using a Construction Manager/ General Contractor (CM/GC) method of delivery. The process of selecting a qualified CM/GC is complete and FCI Constructors, Inc. has been selected, awarded, and is currently part of the project. The CM/GC will play an integral role working with the design team to help achieve the project goals.

It is anticipated the Admin building will be constructed concurrently with the other structures on campus.

Zoning information

Authority Having Jurisdiction (Building Permits) is the Gunnison County.

Project Design Standards: Gunnison County, Colorado Land Use Resolution (LUR)

- Zone: Current – Agricultural
  Intended – Public *(After approved Land Use Change Permit (LUP) process).

- The site design and water usage will comply with the 2018 Wildland-Urban Interface Code (WUIC)

- Lot Measurement Restrictions (none required of a Public District)
  - Minimum lot area (13-103.D.2): 35 acres (Subject to modification by approved LUP)
  - Minimum lot Depth: 0 feet (N/A)(Not governed by LUR)
  - Minimum frontage: 0 feet (N/A)(Not governed by LUR)
  - Setbacks for principal structures (13-107, Table 7)(No setbacks for public, listed as 0 until LUP):
    - Front: *0 feet (N/A)
    - Side: *0 feet (N/A)
    - Side adjoining residential: *0 feet (N/A)
    - Side adjoining business or com: 0 feet (N/A)
    - Side adjoining agricultural: 0 feet (N/A)
    - Side adjoining public Lands: 0 feet (N/A)
    - Rear: *0 feet (N/A)
  - Setbacks from Roads: 40 feet along CR 317 frontage (Subject to modification by approved LUP)

- Building Limitations
  - Height (13-103.H) Undefined (N/A)
  - Area Undefined (N/A)

- Parking: Final parking count will be negotiated as part of the LUP. CBFPD estimates 30 spaces would exceed their needs. The following are factors from the Appendix, Table 3 of the LUR:
  - Government Office: 1 parking space / 300 sf
  - Warehousing and Storage: 1 parking space / 500 sf of gross floor area
  - Multiple Family: 2 parking spaces per residence for up to 3 bedroom residence; one additional space for each additional bedroom

- Protection of Water Quality
  - Requirements shall not extend beyond 125 feet of water body / wetland. (11-107.C)
  - Restrictive Inner Buffer: 25’ from ordinary high water mark (11-107.E.2)
  - Slopes Steeper than 15%: 25’ from edge of slope (11-107.E.4.b.1)
  - Highly Erodible Soils: 25’ from edge of soils (11-107.E.4.b.2)
  - Vegitation Providing Bank Stability: 25’ from edge of feature (11-107.E.4.b.2)

  * LUR does not have a “Public” use. Therefore, most setback restrictions do not apply and are noted as (N/A). These setbacks will be determined and set during the Land Use Change Permit (LUP) process.

Design team initially used “Commercial and Industrial” use as a guide for setbacks. The Owner directed the design team to encroach upon the 25’ setback adjacent to a residence and the 40’ setback from CR 317.

There is no entity responsible for review or critique of the project design such as BOZAR or the Town of Crested Butte (ToCB) Design Guidelines. The ToCB may attempt to gain influence in exchange for access to the ToCB water and sanitary sewer services.

Exclusions

This report and therefore the project scope does not currently contain any of the following items. If added to the project it is anticipated they, or any other scope modifications would result in additional fees and potential re-design of work already performed.

1) Zero Energy – The scope of this project does not include any provision for any building(s) to be zero energy or zero carbon. Nor does it include any energy analyses, simulations, enclosure testing, or mockups. If any of these items or similar items are added to the scope of the project, project fees, construction costs, and project timeline would need to be re-evaluated before moving forward.
2) Roof Mounted Pholtovoltaics (PV): The project will be designed to more easily accommodate the future installation of PV structures and panels on the roof. Features include consideration in the structural design and electrical.
3) LEED: No aspect of the project will pursue LEED Certification at any level

2. Project Schedule

Phase	Completion
FINAL Schematic Design and Cost Estimate:	June 21, 2023
CBFPD BOD-SD Approval Meeting:	July 11, 2023
Final Design Development and Cost Estimate:	October 9, 2023
CBFPD BOD-DD Approval Meeting:	October 10, 2023
BG+co Final Contract Documents to FCI for pricing:	July 25, 2023
Final Contract Documents and GMP:	September 05
CBFPD BOD-CD Approval Meeting:	January 30, 2024
Begin Construction Phase:	March 19, 2023
Mobilization:	April 12, 2024
Substantial Completion:	July 7, 2025

3. Preliminary Code Analysis

In cooperation with Gunnison County, the CBFPD has voluntarily agreed to comply with the 2021 code editions in lieu of the currently enforced codes.

Building Codes Followed:

By Gunnison County
- 2021 International Building Code (IBC)
- 2021 International Mechanical Code (IMC)
- 2021 International Energy Conservation Code (IECC) without Appendix RC adoption
- 2021 International Fuel Gas Code (IFGC)

By the State of Colorado
- 2018 International Plubming Code (IPC)
- 2020 National Electrical Code (NEC)

Referenced Standards:
- 2017 ICC/ANSI 117.1

Chapter 3 Use and Occupancy Classification:

IBC Section 304. The proposed use is classified as a Mixed Use – Non-Separated occupancy of Assembly A-3, Business Group B, Residential (R-3), and Storage (S-1 and S-2).

Chapter 4 Special Detailed Requirements Based on Use and Occupancy:

Section 420.2 requires that all separating dwelling units in the same building, walls separating sleeping units in the same building and walls separating dwelling or sleeping units from other occupancies contiguous to them in the same building shall be constructed as fire partitions in accordance with Section 708. Section 520.3 requires that floor assemblies separating dwelling units in the same buildings, floor assemblies separating sleeping units in the same building and floor assemblies separating dwelling or sleeping units from other occupancies contiguous to them in the same building shall be constructed as horizontal assemblies in accordance with Section 711. Group R occupancies shall be equipped throughout with an automatic sprinkler system in accordance with Section 903.2.8.

Chapter 5 General Building Heights and Areas:

The building is permitted 2 stories per Table 504.4 using the stricter requirement for Occupancy ‘S-1’ and have a maximum height of 60 feet by Table 504.3. The maximum allowable area after consideration of the Type V-B construction, being fully fire sprinklered, and its location on the property is 24,000 SF/story for the two floors of the entire building using the stricter requirement of Occupancy ‘A-3’ [Table 506.2]. Building as designed is below this value therefore calculations for increase based on frontage are not required. In each story, the building area shall be such that the sum of the ratios of the actual building area of each separated occupancy divided by the allowable building area of each separated occupancy shall not exceed 1 [IBC 508.4.3].

Section 508.3.3 allows that no separation is required between nonseparated occupancies; however, Group R-3 dwelling units and sleeping units shall be separated from other dwelling or sleeping units and from other occupancies contiguous to them in accordance with the requirements of Section 420.

Chapter 6 Types of Construction:

This building will be of the type of construction described in IBC Section 602.2 for Type VB. In this type of construction structural elements, exterior walls, and interior walls are of any materials permitted by the IBC code. IBC Table 601 requires (0) fire-resistance ratings for building elements in a Type VB construction. IBC Table 602 requires (0) fire-ratings for exterior walls of B, R, S-1, or S-2 occupancy groups with fire separation distances equal to or exceeding 10 feet. If this distance is between 5 and 10 it will need to have a 1 hr rating and if this distance is less than 5 feet, it will need a 1 hr rating for occupancy groups B, R, and S-2 and a 2 hr rating for occupancy group S-1.

Chapter 7 Fire and Smoke Prevention Features:

Exterior walls shall comply with Section 705. Section 705.2 requires that cornices, eave overhangs, exterior balconies and similar projections conform to minimum projection distances specified by Table 705.2. Buildings on the same lot must comply with requirements set forth in Section 705.3. Section 705.8.1 requires that the maximum area of unprotected and protected openings permitted in an exterior wall in any story of a building shall not exceed the percentages specified in Table 705.8. Section 705.11 requires that parapets be provided on exterior walls of buildings except if the wall is not required to be fire-resistance rated according to Table 602 because of fire separation distance. Section 705.11.1 requires that parapets have the same fire-resistance rating as that required for the supporting wall.

Section 708.3 requires that fire partitions shall have a fire-resistance rating of not less than 1 hour except that dwelling unit and sleeping unit separations in buildings of Type IIB, IIB, and VB construction shall have fire-resistance ratings of not less than ½ hour in buildings equipped throughout with an automatic sprinkler system. Section 708.4 requires that fire partitions extend from the top of foundation or floor/ceiling assembly below to the underside of the floor or roof sheathing, slab or deck above or to the fire-resistance-rated floor/ceiling or roof/ceiling assembly above, and shall be securely attached thereto.

Section 711.2.4.3 requires that the fire-resistance rating of horizontal assemblies serving as dwelling or sleeping unit separations in accordance with Section 420.3 shall be not less than 1-hour fire-resistance-rated construction with the exception that horizontal assemblies separating dwelling units and sleeping units shall be not less than ½-hr fire-resistance-rated construction in a building of Type IIB, IIIB, and VB construction, where the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

Chapter 8 Interior Finishes:

IBC Table 803.13 requires other wall and ceiling finishes to be Class B in interior exit stairways and Class C in all other rooms and spaces.

Chapter 9 Fire Protection Systems:

Fire Suppression is not required by code but is being installed at Owners preference.
Fire Extinguishers shall be installed in accordance with NFPA 10.

Neither Manual or Automatic Fire Alarm system is required as the projected Occupant loads are less than the triggers given in IBC Sections 907.2.2 and 907.2.7.

Chapter 10 Means of Egress:

2018 IBC Table 1004.5 sets the maximum floor area allowance per occupant for B and M occupancies. This table sets the total building occupant load as follows: Note: occupancy and exiting was calculated based on the original SD Submittal.

Floor	Square Footage	Occupancy Factor	Occupant Load
First–A-3 Occupancy	1,610 SF	15 net	108
First–B Occupancy	4,692 SF	100 gross	47
First–B Occupancy (Exercise)	1,066 SF	50 gross	22
First–R-3 Occupancy	628 SF	150 gross	4
First–S-1 Occupancy	1,946 SF	300 gross	7
First–S-2 Occupancy	7,310 SF	200 gross	37
Second–B Occupancy	3,893 SF	100 gross	39
Second–S-1 Occupancy	513 SF	300 gross	2
Second–S-2 Occupancy	689 SF	200 gross	
Total:	**22,347 SF**		**266**

IBC Table 1006.3.2 sets the minimum number of exits or access to exits with 1-500 occupants at 2 per story. The maximum exit access travel distance for a B occupancy in a fully sprinklered building is 300 feet and 250 feet for an M occupancy per IBC Table 1017.2. Maximum Common Path of Egress Distance 75 feet for M occupancy and 100 feet for Business occupancy spaces (Table 1006.2.1). Maximum occupant load of any of the space uses with one exit shall not exceed 49 (Table 1006.2.1). There is no fire-resistance rating required in sprinklered B or M occupancy groups for corridors per Table 1020.1. The minimum corridor width is 44” per IBC Table 1020.2.

Chapter 11 Accessibility

IBC Section 1104 requires at least one accessible route be provided from accessible parking, accessible passenger loading zones, and public streets or sidewalks to an accessible entrance to the building. IBC Section 1105 requires that at least 60% of all public entrances be accessible. IBC Section 1104.4 requires at least one accessible route be provided to each level of multi-story buildings (elevator required). IBC Section 1109.2 has requirements for toilet and bathing facilities to be accessible. IBC Section 1111 has requirements for accessible element signage.

Chapter 12 Interior Environment

IBC Section 1204 requires temperature control for all interior spaces intended for human occupancy to provide and maintain indoor temperatures of not less than 68°F (20°C) at a point 3 feet above the finish floor. Section 1205 has requirements for providing natural and artificial light. Section 1210 has requirements for toilet and bathroom finishes of walls, floors, and partitions to be smooth, hard and nonabsorbent materials.

Chapter 13 Energy Efficiency:

IBC Section 1301 requires buildings to be designed and constructed in accordance with the International Energy Conservation Code. According to the 2015 IECC, the Town of Crested Butte is in Climate Zone 7. Insulation entirely above roof decks are required to provide an insulating value of R-35 continuous insulation (ci) per Table C502.1.3. The above grade walls of metal framed buildings are required to provide R-13 plus R-7.5 continuous insulation value in all areas except the sleeping rooms, which are required to provide R-13 plus R-15.6 continuous insulation value. The building envelope will be examined as a whole using ComCheck software to ensure compliance with the IECC requirements.

Chapter 29 Plumbing Systems:

For the Business (B) occupancy, 1 water closet is required per 25 for the first 50 people, and 1 per 50 for the remainder exceeding 50. 1 lavatory is required per 40 for the first 80 and 1 per 80 for the remainder exceeding 80. 1 drinking fountain is required per 100 people, and 1 service sink is required. For the Residential (R-3) occupancy portion of the building, 1 water closet per 10 people is required, and 1 lavatory per 10 people is required. 1 bathtub/shower is required per 8 people, and 1 drinking fountain is required per 8 people. 1 service sink is required. For the Storage (S-1 and S-2) occupancies, 1 water closet and 1 lavatory are required per 100 people. 1 drinking fountain per 1000 people is required, and 1 service sink.

Chapter 30 Conveying Systems:

The elevator is required for accessibility (IBC Section 1109.7) however it is not required to be used for accessible egress (IBC Section 1009.2.1).

4. Civil Concept

The site of the proposed project is located just north of the Town of Crested Butte Colorado within unincorporated Gunnison County and is bordered to the south by the Town of Crested Butte Slate River Annexation, to the west by Gunnison County Road 317, to the east by the Slate River and to the north CR 317 bends to the east and crosses over the Slate River creating an overall triangular shaped site. Adjacent to the Slate River on the east side of the property are high quality wetlands and some steep slopes on the southeast side of the property sloping to the river and wetlands. Therefore, there is a strict river and wetlands setbacks that must be protected on the east side of the project. The total project site consists of approximately 2.4 usable acres.

The existing site is undeveloped with native grass and sagebrush vegetation (no existing trees or structures on site). The site is relatively flat sloping to the north at about 3% but does have a hill in the southeast corner of the property that the site will be cutting into and will require 2-6' boulder retaining walls.

Site work to include all grading, drainage, utility, access and parking for the overall campus. The Crested Butte Fire Protection District New Emergency Services Campus includes two distinct buildings – Headquarters (HQ) and Search & Rescue (SAR). The overall campus site design will be developed as a unified site with site grading, drainage, paving, parking, and utilities working together but with separate utility meters and services for each building.

As shown on the Schematic Architectural Site Plan the campus will have two primary entrance and egress with the main entrance for visitors is to be from the north end of the site off CR 317 accessing a parking lot for the administration sides of both buildings with access to the main HQ entrance on the northwest corner of the main headquarters building from this parking lot. The parking lot is sized to provide additional parking for the search and rescue building. The second ingress and egress primarily for fire employees only will be off CR 317 at the southwest corner of the site accessing employee parking and the the drive through bays of the main HQ building. The emergency vehicle bays will open directly onto the CR 317 for access. SAR vehicles will exit the site through the second southern egress to CR 317. All paved areas are to be 3" of asphalt over 9" of CDOT compacted class 6 aggregate basecourse (approximately 3,530 S.Y.). There will also be 30' long by 75' wide 6" thick concrete snow melt aprons on both sides of the vehicle bays (approximately 800 S.Y.).

The asphalt access and parking areas will be lined by spill curb and gutter along the building sides of the parking and will have a flush concrete ribbon curb on the outsides of the parking and drive areas so snow can be plowed off and to the outsides of the site. Below are example details of the curb and gutter and flush ribbon curb to provide conceptual examples (approximately 740 L.F spill curb, 640 L.F flush ribbon curb).

There will also be a future 8' wide concrete side walk along the west side of the property paralleling CR 317 that is described in the Landscape scope of work in addition to other site hardscape around the buildings.

Site Grading will include the grading with a 2% cross slope of an 8' wide soft surface trail from the middle of the south boundary of the property wrapping around the east side of the site above the river slope terminating at the north end of the site before the old bridge crossing foundations (approximately 650 L.F.).

Grading and Drainage

In general, the natural existing drainage of the site flows from the south to the north before turning east and out letting to the Slate River. The developed site will divide the drainage into two halves with a ridge

line running through the middle of the site east/west approximately down the middle of the SARs building and splitting the HQ building in half. This will create two drainage basins, one in the south and one in the north each with their own surface detention pond. The site will have the buildings siting higher along that ridge line and positive drainage sloping away to either the south and west or north then east. Both detention ponds will have selected granular porous material (biofiltration) on the bottom to promote infiltration and will have concrete outlet structures. The south detention basin in the southwest corner of the site will outlet to the west where it will flow in a vegetated roadside swale parallel to CR 317 before discharging to the Slate River. The south side of the site will also have a 6' wide valley-pan draining the asphalt area from the SAR building to the southwest detention pond. The north side of the site will sheet drain to a second detention basing before it discharges to the Slate River. Drainage components consist of

- Vegetated roadside swale approximately 30" deep by 8' wide by 550' long
- Three (3) 24" HDPE culverts under the three access drives total 220'
- Two detention ponds with biofiltration (sand and gravels) bottom (650 SY bottom total area) and two concrete outlet structures
- 170' long 6' wide concrete valley-pan

The entire 2.4 acres of the development site will need to have 6"-8" of topsoil removed and then 1'-2' of site leveling, grading and compacting of native material across the site. It should be anticipated that 1'-2' of structural fill be placed under the buildings for proper fill material (see structural narrative). Any non-formal landscaped area will have topsoil replaced and be re-vegetated with native seed mixes. However excess topsoil and building excavation spoils will have to be removed from the site and cannot be wasted on the site.

The east and south portion of the property will be cutting into a mild hillside and require boulder retaining walls. On the east side of the SAR building is where this boulder retaining wall will be largest and range from 3' tall to 6' tall at the tallest and be approximately 215 L.F. long. On the south side of the property the boulder retaining will only need to be approximately 18"-24" tall and only need one course of boulders stacked and be about 150 L.F. long. Below is a conceptual detail for the boulder retaining walls.

As described above the east side of the site also has sensitive wetlands areas and during construction and re-vegetation significant construction stormwater management BMPs must be implemented and maintained, and the contractor must obtain and follow all Colorado Construction Stormwater Discharge permits and requirements.

Utilities

There is an existing 20' electrical and communications easement on the west side of the site with existing utilities in them the must be protected and maintained. Atmos Gas has a main line located on the west side of CR 317. Water will come from an onsite well (not yet drilled, to be part of the project) located on the northeast side of the project between the detention pond and the Slate River and will have its own onsite storage and treatment. Sewer services will come from the south side of the site from the Town of Crested Butte and will require main line extensions to the property from Pyramid Avenue located in the Town.

- Domestic Water: A new Fire District owned and operated water well will need to be drilled on the north side of the property. Water quality and quantity are unknown currently, design is assuming 30 gallons per minute from the well. A 7' deep 2" HDPE line will need to run from the well to the water treatment and storage room located on the outside of the HQ building (approximately 250 L.F.). The well itself will require a well pump that can provide 30 gallons per minute at 50 feet of head supplying two 500 gallon water storage tanks (piped in parallel) located in the HQ building water treatment and storage room and be controlled by a Well/Tank automated control system

with floats in the tanks similar or equal to the attached Mission MyDro 850 control system. All required electrical and control will for pump will need to be buried along side the water line. Inside the HQ building water treatment and storage room after the two 500 gallon water storage tank will be a booster pump to bring building water pressure up to 60-70psi and connect to a 500 gallon hydropneumatic bladder system tank keeping the building plumbing at required domestic pressure. Also, from the booster pump to the hydropneumatics tank will be a chlorine disinfection feed connection to the water stream providing the chlorine contact time in the hydropneumatic tank. After the hydropneumatics tank piping will separate to both the HQ and SAR buildings, piping between the HQ and SAR building will be 2" HDPE and buried min 7' deep with valving on both sides for isolation.

- Fire Water: Raw fire water for the project will be provided by the same well described above for the domestic water. The 2" HDPE line from the well to the HQ building will branch off at the building and also supply a 24,000-25,000 gallon buried fire water storage tank located approximately 15' east of the HQ building. Associated valving will be required for the well pump to supply both the domestic water tanks and fire water tank; but both can be run off the same Tank/Well automated control system with floats also in the fire water tank. See attached Xerxes fire protection tank diagram to be similar or equal to; a deadman system or footing system will be required on the tank to counter the buoyancy forces by anticipated high groundwater. The sprinkler-system configuration with a vertical turbine pump will be required for the fire suppression system. However, the vertical turbine pump will be located inside the HQ water treatment and storage room located approximately 30' from the tank, and so a 30" DIP piping system from the bottom of the tank bottom sump running over to under the HQ water treatment and storage room and up vertically for the vertical turbine pump to sit in will be required. The fire vertical turbine pump shall be FM certified and meet the flow and pressure requirements listed in the Fire Protection/Fire Alarm Schematic Design Report. Two options for the fire vertical turbine pump shall be provided for pricings,1) an electric pump that utilizes the HQ building backup generator for backup power 2) a stand alone diesel engine pump to be able to run on diesel fuel and not rely on electricity. A fire connection to the outside of the HQ building connected to the sprinkler fire suppression system shall also be required.
    - In addition to the fire sprinkle system a site dry fire hydrant will be required that is connected to the Slate River. The dry fire hydrant will be located on the northeast side of the drive area (near the detention pond) and will have a 12" DIP buried line connecting to a gravel infiltration collection system located at the bottom of the Slate River (approximately 200 L.F.)
- Sanitary Sewer: The entire project site is at a lower elevation than the Town gravity sanitary sewer system. There is an existing gravity manhole located at the north end of Pyramid Avenue and 8th Street that has a tie in location for this project. A central single sanitary sewer lift stations will be required to serve both buildings and be expandable for future Town owned TP1 lot. Outside of the lift station will be a central wet-well manhole that will collect wastewater from both buildings and potential future TP1 lot (approximately 8' diameter and 12' deep) before combining flows into the lift station. The lift station for our current project demands will need to be able to pump approximately 1400 gallons per day at a total of 40' of total dynamic head. From the lift station a single 4" HDPE pressure force main line will run south in an easement across TP1 to Pyramid Ave right of way and east to 8th Street where it will connect into an existing gravity manhole, approximately 710 L.F. total. Gravity sewer service lines from each building will flow the lift station wet-well and will need to be buried 7' deep (6" SDR 35 PVC 385 L.F.). All sanitary sewer work, must follow Town of Crested Butte Public Works Criteria and specifications, including testing, inspecting, start up and acceptance.
- Gas: Atmos gas main line runs parallel to CR 317 but on the west side. Gas service line 36' deep will need to be bored under CR 317 in a shared 4" sleeve and then separate services and meters for the two buildings. The boring is approximately 100 L.F. and the service to the two buildings an additional 300 L.F.

- Electrical: 3 Phase electrical power is in the 20' electrical easement on the west side of the property by Gunnison County Electrical. A new transformer will need to be set on the property adjacent to the proposed generator. Existing 1 phase power and box is located at the southeast side of the property that can serve the SAR building, but the line will need to be looped to the new transformer on the west side of the property.
- Communications services are located at the southwest corner of the property in the existing 20' utility easement and will serve all three buildings from that location.

5. Landscaping and Irrigation Concept

The Crested Butte Fire Protection District New Emergency Services Campus includes two distinct buildings – Headquarters (HQ) and Search & Rescue (SAR). The overall campus site design will be developed as a unified site with unique elements associated with each building as the uses for each structure differ. The overall site design theme will draw from the nearby natural landscape of the Slate River Valley framed by the Elk Mountains. Landscape plant materials will showcase native trees, shrubs, grasses, and perennial wildflowers. The landscape plan will be designed to be waterwise and low maintenance and will comply with the 2018 Wildland-Urban Interface (WUI) Code as adopted by Gunnison County. Snow storage / management, drainage and stormwater management will be addressed on a campus wide basis.

Open space at the west corner of the site will provide space for stormwater detention and an aesthetic foreground as one approaches the site from the Town of Crested Butte. This area will include native trees, understory plantings and native grass & wildflower restoration. This will be a passive space and an important opportunity to establish the aesthetic character of the site landscape design.

Image 1 - Detention pond garden space

The HQ building dominates the Gothic Road frontage and is the largest mass of the two structures. Due to space restrictions and utility easements, landscaping along the Gothic Road frontage will be limited to small maturing trees along with shrubs, ornamental grasses, perennials, and landscape boulders. Additional planting may be incorporated with movable planter boxes and pots. A future concrete sidewalk may be extended along the Gothic frontage, providing connectivity from Town property to the Emergency Services campus and a growing recreation/transportation trail system. A vegetated ditch for storm water management will line the frontage between the back of curb and a future sidewalk.

The main public entrance is located at the NE corner of the HQ building. This entrance area will include a small plaza to mark this civic amenity with the opportunity to incorporate interpretive/story telling elements about the history of the CBFPD and/or the natural surrounding landscape/ecology. Information may be expressed using sign panels or as artwork and graphics incorporated into site elements such as paving and site furnishing. This plaza will include hardscape paving (concrete or pavers), boulders, planters, benches, bike racks, trash receptacle, integrated interpretive/story telling elements (signage or artwork).

Image 2 - Courtyard plaza with pavers and boulders

The east courtyard and patio of the HQ building is framed by the Administration wing of the building and provides space for employees and training exercises separate from the public. The courtyard area is protected from the NW prevailing winds and open to views of Mt. Crested Butte and down valley. This area will accommodate training activities, outdoor meetings, relaxing, gathering, eating and outdoor fitness. This space is intended to serve the needs of employees, volunteers, and visitors of the HQ building, but not for the public at large. Landscaping and circulation associated with this space will reinforce the separation between general public access and the east courtyard.

The north and east sides of the site overlook the Slate River. Drainage naturally flows to this area of the site. A detention pond will be situated in this area. Plant material will be selected to blend with the native surroundings and provide filtration within the detention pond for runoff from the adjacent parking lot before it flows to the river. Erosion control mitigation and biofiltration measures will be incorporated into the landscape design to protect the Slate River.

The SAR building is located behind and perpendicular to the HQ building and is adjacent to the private residential property to the south of the project site. Landscaping (trees, site grading) will be used to soften the mass of the building from the adjacent property and provide outdoor space for the SAR building users. The character of the proposed landscaping will tie seamlessly with the natural landscape and will create a buffer between the differing land uses.

There are opportunities to tie in with potential future trails for increased pedestrian/bike connectivity through or adjacent to the site. Site circulation via a future soft surface (gravel or decomposed granite) trail will be explored as part of the Emergency Services Campus circulation system. This includes grading for a future, 8’ wide, non-motorized crusher fines trail connecting the Slate River Subdivision TP-7 to the former South bridge abutment on the CBFPD plat. Boulder retaining walls will be located to best support proposed circulation paths and will be used to create space for and frame outdoor spaces in addition to retaining grade as needed. Locally available boulders shall be used to construct boulder retaining walls.

Image 3 – Native and waterwise planting with boulders and non-combustible gravel mulch

Landscape Elements shall include:

- Gothic Road Frontage
  - Native seeding and naturalized landscaping
  - Future sidewalk – 8' wide concrete walk, approximately 390 linear feet
- HQ Public Entry Plaza
  - Hardscape paving (patio & walkways)
  - Flag poles
  - Planter boxes and/or pots
  - Planting beds
  - Bike rack & bike maintenance kiosk
  - Trash receptacle
  - Benches
  - Interpretive/story telling signage or integrated design element
  - Hardscape sidewalks to connect to minor entrances, public trail (future)and parking
- East Courtyard
  - Hardscape paving (patio & walkways)
  - Tables and chairs
  - Trash receptacles
  - Bike rack
  - Hardscape sidewalks to connect adjacent entrances
- Future site path – 8' wide decomposed granite walking path, approximately 650 linear feet
- Landscape beds with native shrubs (5 gallon), perennials and ornamental grasses (1 gallon). All beds will be mulched with gravel or shredded cedar mulch.
- Landscape boulders in planting beds, natural areas (for beauty & texture) and adjacent to patios (for seating alternative).

Image 4 – Civic entry plaza with waterwise planting, flags, and special paving

Image 5 – Bike maintenance kiosk

- Buffer planting to include deciduous (2”-3”caliper) and evergreen trees (6’ to 10’+). Tree species to include cottonwood, aspen, chokecherry and spruce.
- Native seeding with grasses and wildflowers to all disturbed areas unless otherwise noted.
- Automatic, pressurized, underground irrigation system to connect to raw water, if available. Drip irrigation and micro-sprays shall be used to efficiently irrigation shrubs, trees, perennials, and groundcovers. Pop-up sprays shall be used for turf areas. Rain sensors shall be included. A programmable automatic irrigation controller with remote control capabilities shall be provided. If the system needs to connect to domestic water, a proper backflow preventer will be installed. Temporary irrigation may be used in native revegetation areas for an establishment period of 3-5 years.
- Boulder retaining walls as needed (see Civil)

6. Exterior Architectural Concept

The new Central Administration, Fire, and Emergency Services (HQ) building has a life expectancy is 50+ years and the expectation is for required maintenance to be minimal. A dry stacked stone water table extends up to 3'-0" high around the entire building. Wall surfaces above the masonry will be a yet to be determined non-masonry siding product. In some locations of the building, the siding product will be oriented vertically to create differentiation. This vertical siding product will be the composite product where heights are less than 12'-0". The building mass containing the apparatus bays will be brick veneer for the entire height of the wall above the stacked stone water table. The bay accessory support spaces will be siding for the entire height of the wall above the stacked stone water table.

Windows are currently assumed to be composite, double hung where operable, and minimal areas of storefront or larger window openings. All glazing should be triple pane with low-E coating. All wall openings including windows and doors facing Gothic Avenue shall be of a noise reduction design. All windows shall receive manual, light filtering shades. All windows at sleeping, conference, and training rooms shall receive manual dual-shade treatments with light filtering and blackout fabrics

The heating and cooling equipment will be located on the low slope roof, screened by parapets. The roof is anticipated to be a single-ply membrane product with a 30-year warranty (EPDM). There will be an option to build a structure and install photovoltaic cells at the open roof areas as well.

A community alert siren will be located on the roof at a location to be identified. The siren shall be provided by the Owner and installed as part of the contract.

Typical Exterior Assemblies:

- Exterior Siding Walls: 5/8" interior gyp, 6-8" cold-formed metal framing studs, closed cell spray foam insulation (R-9), fiberglass mat gypsum sheathing, fully adhered water and air-resistive membrane barrier, 2-in-1 continuous insulation system (R-18), siding* (vertical and horizontal) attached through Z-clips or subgirts
- Exterior Brick Veneer Walls: 5/8" interior gyp, 6-8" cold-formed metal framing studs, closed cell spray foam insulation (R-9), fiberglass mat gypsum sheathing, fully adhered water and air-resistive membrane barrier, 2-in-1 continuous insulation system (R-18), 2" air space, brick veneer with tiebacks
- Exterior Stone Veneer Water Table: 5/8" interior gyp, 6-8" cold-formed metal framing studs, closed cell spray foam insulation (R-9), fiberglass mat gypsum sheathing, fully adhered water and air-resistive membrane barrier, 2-in-1 continuous insulation system (R-18), 2" air space, stone veneer attached with anchors
- Roof Assembly: Steel/CLT deck, vapor retarder, polyisocyanurate insulation (min. R-45), cover board, fully adhered EPDM membrane (may be some portions of metal roof where slopes are shown)
- Roof Assembly at Outdoor Patios: Steel/CLT deck, vapor retarder, polyisocyanurate insulation (min. R-45), cover board, paver system on pedestals

*Siding material TBD. Options include:
- composite siding material (sim. Resysta)
- metal wall panels (sim. AEPspan)
- fiber cement cladding (sim. Equitone)

7. Interior Architectural Concept

The interior architectural concept is to provide CBFPD sufficient space to service the Town of Crested Butte. The interior design of this building is divided into three basic parts:

1) Public – The northern portion of the building. This space serves primarily the Fire District's public functions such as CBFPD administration offices, meeting rooms, training room, and all support areas required such as storage, circulation, and restrooms. There is a portion of office and support space on the second floor that will be shell only. The extents are indicated on the drawings.

   The interior architecture of this area will be functional and durable. Typical wall construction will be metal stud with sound insulation and gypsum wall board finish. Public spaces such as the entrance vestibule, lobby, and training room will include dynamic ceiling design, millwork, accent finishes, and upgraded floor finishes creating elegant yet welcoming spaces. Space and millwork in the vestibule will display historic and important icons of the CBFPD.

2) Non-Public, firefighting living/work area – The middle of the building. This space provides functions needed by the firefighting employees between assignments including sleeping rooms, showers with glass shower doors, workspace, fitness room, kitchen, day room, and support spaces.

   The interior architecture of this area will be functional, and durable as well. Typical wall construction will be metal stud with sound insulation and gypsum wall board finish. Moisture resistant gypsum board should be installed in spaces with water. Sleeping rooms will have painted Type X gypsum board ceilings while the remainder of ceilings will have acoustic, lay-in ceilings. Floor finish will be durable and quiet.

3) Apparatus Bays – The southern portion of the building. This area contains the active functions of the facility. It contains (4) apparatus bays for emergency and fire response bays as well as adjoining support spaces, including apparatus storage, equipment cleaning, storage, training activities, and related support areas, and (1) maintenance bay for apparatus repair.

   The interior architecture of this area will be functional and durable. Typical wall construction will be metal stud with gypsum wall board and masonry veneer to a height of 10'-0" where appropriate such as all walls in the bays where the potential for water and impact will be high. The entire length of the south wall in the fire bay is considered to be full-height, masonry veneer for training functions. Ceilings will be open and exposed to structure where appropriate and acoustic, lay-in ceiling where required.

Access Control – Select doors to be identified during a later phase shall include a badge reader type access control that is the same as / compatible as the Gunnison County system in use which is currently "Access It!" by RS2 Technology (https://rs2tech.com/software/access-it/).

Preliminary Finish Schedule:

AREA	FLOOR	WALLS	CEILINGS
Vestibule	Sealed concrete	Painted Gypsum	Gyp Bd. w/ Acoustical lay-in tile
Public Lobby	Sealed concrete	Tile/Painted Gypsum	Gyp Bd. w/ Acoustical lay-in tile
Training Room	Carpet Tile	Painted gypsum	Gyp Bd. w/ Acoustical lay-in tile
Offices/Conf Rms	Carpet Tile	Painted gypsum	Gyp Bd. w/ Acoustical lay-in tile
Elec/Mech/Plbg	Sealed concrete	Painted gypsum	Open to Structure

AREA	FLOOR	WALLS	CEILINGS
Public Restrooms	Porcelain tile	Porcelain tile wainscot up to c.7'-0", epoxy painted gypsum wallboard	Gypsum board
Circulation Spaces	Sealed concrete	Painted impact-resistant gypsum	Acoustical lay-in tile
Fitness Room	Athletic Rubber	Tnemec Painted gypsum	Gyp Bd. w/ Acoustical lay-in tile
Sleeping rooms	Sealed concrete	Painted gypsum wallboard	Gypsum board
Shower rooms	Porcelain Tile	Porcelain tile wainscot up to c.7'-0", epoxy painted gypsum wallboard	Gypsum board
Crew Workspace	Carpet tile	Painted gypsum wallboard	Gyp Bd. w/ Acoustical lay-in tile
Dayroom	LVT	Painted gypsum wallboard	Gyp Bd. w/ Acoustical lay-in tile
Kitchen	LVT	Painted gypsum wallboard	Gyp Bd. w/ Acoustical lay-in tile
Covered Patios	Pavers	Exterior Finishes	Open to Structure
Storage/Janitor	Sealed concrete	Painted gypsum wallboard	Open to Structure
Apparatus Bays	Sealed concrete	Sealed and Painted Masonry up to 10'-0", Tnemec Painted gypsum wallboard w/ accent walls	Open to Structure
Bay accessory spaces (including decon shower)	Sealed Concrete	Tnemec Painted Gypsum	Open to Structure
Maintenance Office	Sealed Concrete	Painted gypsum wallboard	Acoustical lay-in tile

8. Structural Concept

Schematic Design Package 01 – Central Administration, Fire, Emergency Services (EMS)
March 3, 2023

Structural Systems Narrative

GENERAL BUILDING DESCRIPTION

The Crested Butte Fire Protection District – Central Administration, Fire, and Emergency Services building is a new 2-story building, located at 306 Maroon Avenue, Crested Butte, Colorado.

The building will serve as offices, lobby, sleeping quarters, communal spaces, training, ambulance and fire apparatus bays, and maintenance. The ground floor shall consist of primarily public spaces, offices, along with the apparatus bays, and sleeping quarters. The second floor shall have offices, a residential kitchen, and exterior patios, a portion of which will remain un-finished in the initial phase of the project.

This narrative describes the projected structural foundation, floor, roof, lateral and exterior wall systems for the project and discusses the proposed structural design criteria.

DESIGN CRITERIA

- The governing Building Code is the IBC 2021 and referenced codes.
- Design Dead Loads will include:
  - Structure self-weight
  - Allowance for flooring, C/L/M/E (ceiling, lights, mechanical piping and ducts, and electrical) 15psf min
  - Allowance for direct mounted future photovoltaic panels on all flat roofs
- Design Live Loads will include:
  - Design Live Loads will be in accordance with the requirements of IBC
  - Office space: 50psf + 15psf for partitions
  - Residential: 40psf
  - Vehicle Bays: 40psf, concentrated load of vehicle
- This building is classified as Risk Category IV.
- Serviceability:
  - Live Load deflection = L/360
  - Total Load deflection (including creep) = L/240
  - Design floor for ATC Design Guide 1 “Minimizing Floor Vibration”
    - Maximum acceleration = 0.5% g
    - Assumed damping = 3%
  - Wall deflection = L/240
  - Building Drift = H/400 (wind), H/50 (seismic)
- Seismic loading in accordance with IBC and ASCE using the following parameters:
  - Soil Site Class, Per Geotechnical Report: D
  - Response Modification Coefficient (R): 3.0
  - Short Period Spectral Acceleration (Ss): 36.4%g
  - One-Second Period Spectral Acceleration (S1): 8.2%g
  - Importance Factor, Ie: 1.5

  - Seismic Design Category: D
  - Mass calculations will conform to ASCE 7
- Wind loading in accordance with ASCE using the following parameters:
  - Basic ultimate wind speed = 120 mph
  - Exposure category C
- Snow loading in accordance with ASCE 7 using the following parameters:
  - Ground Snow Load, Pg: 125 psf
  - Thermal factor, Ct: 1.0
  - Snow Exposure factor, Ce: 1.0
  - Importance Factor, Is: 1.2
  - Flat Roof Snow Load, Pf: 105 psf
- Frost protection to be not less than 36".
- Foundations will be designed in accordance with the Cesare, Inc geotechnical engineering study number 22.2156, dated December 15, 2022. Foundation system options are summarized in the Foundation section below.

ROOF FRAMING

The roof will consist of flat roofs with parapets. The roofs will be comprised of 3N x 18 ga metal roof deck spanning to open web steel bar joists or wide flange steel beams supported on wide flange steel girders and steel columns. Wide flange beams will be utilized to support rooftop mechanical units where required.

Detailed information is provided below:

Deck	3" N x 18 Gage	
Long Span Joists/Beams @ Bays	40LH's/W21's @ 8'-0" OC Maximum	3.5/5psf
Girders @ Bays	W21's	2.5psf
Joists/Beams	20K's @ 4'-0" OC/ W14's @ 8'-0" OC Maximum	2.5/2.5psf
Girders	W14's	2.5psf
Columns	HSS 8x8 (Interior) HSS 6x6 (Exterior)	2.0psf
Braced Frames	HSS 4x4	2.0psf
Misc. Structural Steel	Bent Plate and Angle	1.0psf
Structural Steel Average Weight:		11.0/12.5psf

SECOND FLOOR FRAMING

The building is proposed to be steel framed to provide the maximum future flexibility in terms of open spans as well as providing fire ratings if required in the future. The floors will be comprised of 2" by 18 ga composite metal deck spanning to wide flange steel beams supported on wide flange steel girders and steel columns.
For preliminary pricing, the following can be assumed:

- Concrete for slab-on-metal deck:
  - F'c = 3,500 psi, normal weight
  - No entrained air

Detailed information is provided below:

Slab	4 1/2" (Above Deck) Normal Weight	
Slab reinforcing	6x6 W2.9xW2.9 Slab Reinforcing Drag Bars	1.0psf
Deck	2" VLI 18 Gage	
Beams	W14's to W21's @ 8'-0" OC Maximum	3.5psf
Girders	W16's	2.5psf
Columns	HSS 6x6 (Interior) HSS 6x6 (Exterior)	2.0psf
Braced Frames	HSS 4x4	2.0psf
Misc. Structural Steel	Bent Plate and Angle	1.0psf
	Structural Steel Average Weight:	12.0psf

FIRST FLOOR FRAMING

The first-floor slab is expected to be a conventional slab-on-grade reinforced with welded wire reinforcement. For preliminary pricing, the following can be assumed:

- Concrete for slab-on-grade:
  - F'c = 4,500 psi, normal weight
  - No entrained air
- Slab-on-grade:
  - 4" thick slab with 6" thick slab at vehicle bays
  - Thickened slabs up to 12" thick at stair stringers, and in mechanical areas

Detailed information is provided below:

Slab-On-Grade	4" Normal Weight with Fiber Mesh	
Slab Reinforcing	6x6 W2.9xW2.9 Slab Reinforcing	0.5 psf
Slab-On-Grade – Vehicle Bays	6" Normal Weight with Fiber Mesh	
Slab Reinforcing – Vehicle Bays	#4 @18" oc	1.5 psf
Prepared subgrade per recommendations of the Geotechnical Engineer		

FOUNDATIONS

The expected foundation system is a shallow spread footing foundation system. During the excavation for the geotechnical report ground water was not found. For preliminary pricing, the following can be assumed:

- Concrete for footings and stem walls:
  - F'c = 3,000 psi, normal weight
  - 6% air-entrainment in stem walls
- Foundations:
  - The allowable bearing pressure is 3,500psf based on dead load plus ½ live load.

Detailed information for each option is provided below:

Typical Exterior Footing and Stem Wall	8" Thick Stem Wall with #4 @ 12" Each Way, Each Face On 16" Wide x 12" Thick Strip Footing with #5 @ 12" If brick or full thickness stone is to be supported on stem wall assume 14" Thick Stem Wall w/ #5 @ 18" Each Way, Each Face on 22" Wide x 12" Thick Strip Footing with #5 @ 12"
Typical Interior Footing	7'x7'x1'-4" Normal Weight Concrete with (6) #6 Each Way, Bottom
Typical Exterior Footing	5'x5'x1'-2" Normal Weight Concrete with (6) #5 Each Way, Bottom
Typical Braced Frame Footing	6'x6'x1'-4" Normal Weight Concrete with (8) #5 Each Way, Top and Bottom

LATERAL SYSTEM

The lateral system for the building will be steel braced frame not detailed for seismic resistance with 5-inch by 5-inch tube steel braces.

EXTERIOR WALL

The exterior walls will be comprised of light gauge metal studs. Six-inch-deep x 43 mil studs are expected to work for the typical walls with 8" deep studs required at the 2 story walls. The design of the metal stud system will be performance specified by Martin/Martin, Inc. to be designed by the metal stud Contractor and their specialty Engineer.

9. Mechanical, Plumbing and Electrical Concepts

Bighorn Consulting Engineers, Inc.
386 Indian Road, Grand Junction, CO 81501
Phone: 970-241-8709

Crested Butte Fire Protection District
New Fire Station
Crested Butte, CO

Mechanical, Plumbing and Electrical Schematic Design Narrative
June 14, 2023

General

The project will include the construction of a fire station with apparatus bays, sleeping rooms, offices, training rooms, and ancillary spaces. This will be a two-story building of about 21648 ft2.

The second story space will be core and shell design. Systems serving this area are to be roughed in to an extent that demolition will not be required in first-floor spaces to complete the future build out. This shall include, but not be limited to:

- Radiant tubing installed in floor,
- Ductwork from DOAS stubbed in the space.
- Refrigerant line set from VRF system stubbed in the space.
- Electrical conduit routed to space.
- Electrical panels and breakers supplied to serve space.
- Domestic pipes routed to space and capped for future use.
- Waste pipe rough-in routed to anticipated fixture locations.

Applicable Codes

2021 International Building Code
2021 International Mechanical Code
2021 International Plumbing Code
2021 International Energy Conservation Code
2023 National Electric Code

Seismic Classification

The project classification is Site Class D, Risk Category IV, and Seismic Design Category D. For this facility, the Component Importance Factor would be 1.5.

The following systems/components will be installed with seismic bracing:

1. Fire protection piping.
2. Electrical conduit larger than 2”.
3. Ductwork with a cross-sectional area greater than six square feet.

4. Domestic, sanitary, storm, or hydronic piping that does not meet the 12-inch hangar rule. Piping 1" or less and supported by a single clevis does not require bracing. Piping 1" or less supported by a trapeze per ASCE 7 does not require bracing.
5. In-line components greater than 75 lbs.
6. Light fixtures in suspended ceilings.

This will be a delegated design for MEP systems performed by a firm specializing in seismic classification and design of restraints for MEP systems and equipment.

Plumbing

It is anticipated that a new fire protection line would be routed to the building to provide fire protection water and a new domestic water line would be routed to the building for domestic water as follows:

1. Fire Station: 6" fire line, 4" domestic line.

This water will come from an onsite water well and storage tank system, and the tap locations will be coordinated during design. The domestic water entry will include a strainer, PRV's, reduced pressure backflow preventer and pressure gauges.

Sanitary sewer lines will exit the buildings and tie to the sanitary mains on site as follows:

1. Fire Station: 6" line.

Coordination with the civil engineering consultant will be necessary to determine final location of the sewer tap for the building. A sewage grinder/lift station is anticipated for the Fire station and location and coordination with the civil engineer will occur during final design.

Natural gas will be routed in the building to serve gas-fired appliances including water heaters, boilers and owner provided, gas-fired equipment for the building. The meter set location will be coordinated during design. Delivery pressure (2 psi or 14" wc) will also be determined during design. The gas needed in the new system will vary with the selection of the mechanical system. Exterior, underground gas piping will be HDPE with fusion welded joints. Interior gas piping will be schedule 40 steel piping. Gas pipe size up to 3" is anticipated, assuming 14" wc delivery pressure.

The Fire station will have a domestic hot water will be supplied by an indirect fired hot water heater. The indirect water heater will be supplied by the boiler plant. It is anticipated that a single 115 gallon, 199 MBH water heater similar to the Raypak - RSIT115 will be used.

The water heaters will be fed from the boiler system and domestic hot water will be routed from this location to all fixtures requiring domestic hot water. Recirculation lines will be routed from the furthest fixtures as required by the IPC.

Exterior hose bibbs will be provided at select locations around the exterior of the building.

Interior roof drains and overflow drains will be provided for drainage on selected roof areas. Interior roof drain and overflow leader piping will be piped independently to coordinated building exits. Overflow piping will have downspout nozzles. The first 20 ft. of leader piping will be insulated with 1" fiberglass insulation.

Plumbing fixtures will be standard grade, commercial quality. The water closets will be high efficiency 1.1 gpf, floor-mounted water closets by Kohler. Urinals will be 0.125 gpf high efficiency style by Kohler. Flush valves will be sensor type with battery power. Lavatory faucets in public restrooms, private restrooms,

and handwash sinks in the bays will be 0.3 gpm sensor type with battery power. Decontamination area sinks will have manual faucets.

Waste, vent, and storm piping inside the buildings will be standard weight cast iron pipe with "No-hub" joints. Underground waste will be DWV rated PVC with solid wall. Domestic water and recirculation piping will be type "L" copper. Domestic hot water will be insulated with 1" fiberglass insulation according to IECC 2015.

Floor drainage will be provided in select areas as determined during design. The drain locations and type will be coordinated with the architect and owner during design. These will include large toilet rooms, locker rooms, and apparatus bays.

Condensate drainage will be provided from each indoor VRF unit thru a condensate drainage system of copper piping to appropriate waste reception.

Specific plumbing items for the Fire station apparatus bays include:

1. A compressed air system will be provided and will include an air compressor, air dryer, and 3/4" copper tubing for air distribution.
2. An emergency eyewash will be provided in the Decontamination room.
3. There will be two, wall-mounted 2-1/2" truck fill connections in each bay. This water will be metered.
4. A 1500 gallon, two-compartment sand/oil interceptor will be installed outside at this end of the building and the location will be coordinated during design.
5. The Cleaning room will have and extractor, sink, washer, and dryer. An indirect sump basin will be provided for drainage.
6. Trench drains will be coordinated during design for floor drainage and will drain to the sand/oil interceptor.
7. A domestic water loop will be provided in the bays for general water usage and washing.
8. 10000 Gallon storage tank for training water purposes and filling apparatus tanks. It is anticipated that the tank will be supplied via 2" domestic water line, and be provided with a method to capture, filter, and reuse water for training purposes.

Heating, ventilating, and air-conditioning

The systems for the Apparatus bays and ancillary support spaces on this end of the building will be composed of the following:

1. A central boiler plant with two, modular, high-efficiency, gas-fired boilers; pumps; indirect water heaters; piping; and controls. The boilers will each have a capacity of 800 MBH and be similar to the Raypak XFIRE-Type H, Model #800B. This boiler plant will also provide heating water to the radiant floor in the Administration portion.
2. Radiant floor will be installed throughout this area and will include 1/2" hePEX at 10" o.c. Other system components will include radiant manifolds, control valves and loop piping. Loops will be limited to 300 feet in length.
3. Snowmelt systems will be installed at the aprons at each overhead door and will extend 8 ft from the door. Systems will include 3/4" hePEX tubing at 12" o.c. Other system components will include snowmelt manifolds, control valves and loop piping. Loops will be limited to 500 feet in length. System fluid will be 50% propylene glycol. The area between the HQ and SAR buildings will be served by this system as well.

4. Suspended, hydronic unit heaters will be placed in these areas for supplemental heating. Typically, a unit will be placed near each set of two OH doors and one in the maintenance bay.
5. Apparatus vehicle source capture exhaust system will be provided for each vehicle. This will be a system composed of exhaust fans, ductwork, track system and breakaway connections.
6. Air circulation fans will be provided for de-stratification in these areas. Fans will be similar to the Air Pear style by Airius.
7. General exhaust fans will be used to provide ventilation throughout and to ensure negative pressure relation to the Administration side of the building. There will be a roof-mounted fan in the ambulance bay, the fire bay, and the maintenance bay. The fans will provide 0.75 cfm/ft2 of exhaust capacity. The general exhaust system will be provided with a carbon monoxide and nitrogen dioxide gas detection system similar to the Macurco DVP-1200 with sensors.
8. The Maintenance office will receive a cold-climate heat pump to provide heating and cooling for the space. The unit will be a nominal 1.5-ton system with the condensing unit on the roof.

The systems for the Administration portion of the building will be composed of the following:

1. Radiant floor will be installed in select areas and will include 1/2" hePEX at 10" o.c. Other system components will include radiant manifolds, control valves and loop piping. Loops will be limited to 300 feet in length. Proposed radiant floor areas include: hallways, fitness, training, public lobby, kitchen, and conference room on second floor.
2. Heating and cooling will be accomplished with a variable refrigerant flow (VRF) air-air heat pump system using heat recovery and a dedicated outdoor air system (DOAS) for ventilation air delivery. The system will be similar to Mitsubishi CityMulti Hyperheat R2 series with heat recovery. Outdoor units will be similar to model PURY-HP240 and might be located on the second floor adjacent to the stairwell.
3. Indoor VRF units will be fan coil or cassette style depending on zone configuration. Each bunk room will each receive a fan coil style unit with supplemental hydronic heating coil to provide an independent zone for each room. Other spaces not served with radiant floor (e.g., first and second floor offices) will be zoned with fan coil style units with supplemental hydronic heating coil. Spaces served with radiant floor (e.g., training room, fitness room, conference room) may have ceiling cassettes.
4. The DOAS unit will provide code required ventilation air to the building and provide heat recovery and will supply up to 2000 cfm. The unit will have DX cooling and gas-fired heating and will temper/cool the incoming outside air to about 72^{o} deg F. The unit may be located on the second-floor roof near the VRF condensers. Supply air and exhaust air ductwork will be routed from the unit to the zones and/or VRF indoor units as needed.
5. Air will be distributed to each zone by steel ductwork built according to SMACNA standards and ceiling-mounted diffusers and grilles. Ductwork will be insulated as per the 2015 International Energy Conservation Code (IECC) with R-6 insulation in unconditioned areas.
6. Exhaust would be provided at restrooms, locker room, janitor closets, etc. by the exhaust side of the DOAS with exhaust ductwork and grilles.
7. The IT room on the first floor will receive a 1.0-ton cooling only split system air conditioner with low ambient cooling.
8. A direct digital control (DDC) building automation system (BAS) will be designed to control and monitor all aspects of the building mechanical system. A Trane SC system will be the basis of design and used to control all the equipment, VRF, DOAS, and miscellaneous monitoring points. The Trane system will be web-based.
9. Building utility metering through the BAS will include: Whole building water usage, whole building gas usage, and whole building electrical usage and demand.

10. Commissioning of building heating, cooling and service water heating systems will be performed by a certified commissioning agent per C408 of the IECC. This will be an independent third-party agent that is contracted with the owner.

Geothermal Considerations

The gas fired boiler plant could be replaced with a geothermal 6-pipe chiller heat pump plant to provide simultaneous heating water and chilled water. 6-pipe chiller plant would be comprised of (4) Water Furnace TruClimate 500 model WCHVM050 units each with a nominal 50-ton capacity. The source would be sized for approximately 600 GPM of total flow.

The portions of the mechanical system requiring heating water would remain the same and would receive their heating water from the 6-pipe chiller. The outdoor air-cooled VRF system (PURY-HP240) described above coupled with the indoor VRF units identified in item #3 would be replaced with a 4-pipe ducted fan coil system. Each VRF fan coil would be replaced with a heating and chilled water 4-pipe ducted fan coil served by the 6-pipe chiller.

The 6-pipe chiller plant would be connected to the site geothermal bore field loop.

Electrical:

Site/Overall

Site lighting will be provided using full cutoff fixtures that are Dark Sky Compliant. Arrangement of building mounted lights and Site poles or bollards shall be such that light does not trespass over the property boundaries in accordance with IECC 2021 requirements. The need for additional Site task lighting to assist with operations or training scenarios will be coordinated during the design. Site lighting layout will take into consideration the planned Helicopter Landing Zone and flight path, including pole height, placement, and light source visibility. Provide two (2) conduits running between buildings. One is to be for Fire alarm (low voltage) and one for future use. Size of conduits to be determined during design.

Lighting

The lighting system for the project will include the most energy efficient lighting available with consideration from a maintenance standpoint to provide the most compatible light fixtures. Vehicle bays are planned to have LED low-bay lighting that is coordinated with the equipment and vehicle layout to provide the most effective coverage. Sleeping rooms are planned to have LED lighting that is arranged with Crew Member comfort in mind and to provide individualized room controls. Offices, Workspaces, Training Rooms, and similar areas are planned to use LED panels, downlights, and pendants for a contemporary commercial Office building environment.

Automatic lighting controls will be provided where required or practical to turn lights on when occupants enter an area and off after a period of inactivity. Automatic daylight harvesting controls shall be provided where required by the governing IECC. Corridors and circulation paths will have a minimum number of lights on 24/7 with the remaining lights controlled by local switches or occupancy sensors. The lighting in the Offices, Workspaces, Training Rooms, and similar areas will be coordinated with the best usage in mind for these areas. All the fixtures will have dimming capabilities in conjunction with the LED light fixtures.

Exterior lighting will be controlled by a timeclock or photocell and provide the ability to reduce light output via fixture dimming.

General Power

The electrical service is planned to be a 1200 amp, 277/480V, 3 phase design. The ratings of the electrical gear may require special provisions for Egress from the dedicated Electrical working space and these requirements will be coordinated during the design.

The entire electrical service is planned to be backed up by a Cummins Turbo-diesel generator that is configured for continuous operation (i.e., COPS NEC 708) for a period of 72 hours minimum. Estimated size of backup generator is 350kW and provisions for a load shedding transfer switch to the SAR building shall be planned at minimum. Confirmation of generator capacity and alternate solutions for backup generator power will be discussed during the design and may include increased nominal size and load shedding or transfer switch configurations, add alternate option for independent backup generator for the SAR building (~65kW), etc. Due to the operational requirements and anticipated size of the backup generator, it is planned to have a 4000-gallon underground diesel storage tank onsite with a redundant fuel transfer pump configuration to resupply the running fuel tank automatically using float level controls. The location and size of the fuel tank will be coordinated during the design. The electrical gear will have protection against overvoltage (SPD) as well Arc Energy Reduction as part of the main disconnect. The electrical system will be designed to handle the demands of a typical building of this usage with capability to handle power requirements for general office and training operation in addition to Emergency response and operations related to Fire and EMS activities. All electrical devices will be specification grade.

The building will require a fire pump for the sprinkler system and the fire pump is planned to be installed remote to the building. The fire pump will be provided with backup power based on the final design of the system. It is planned that the fire pump will be diesel powered and require minimal backup electric power, or that the fire pump will be electric and provided with a separate transfer switch. The backup power will be from the planned generator and the transfer switch will shed all other loads in the event that the fire pump needs to operate while running on the backup generator.

At least one large pressure pump is anticipated for training purposes to provide pressurized water from the 10,000-gallon underground water storage tank at NFPA acceptable flow rates for Fire Suppression training. The need or desire for a redundant pressure pump, or additional pressure pump, will be coordinated during the design.

A remote sewage lift-station grinder pump is anticipated to be installed on the site to be used by all buildings (Fire Station and SAR). This pump will be powered from the generator backed electrical service from the Fire Station or SAR building depending on final location.

Building metering will be accomplished with a single meter located on the exterior of the building next to the main disconnect/panel. Submetering for building systems to meet Energy Code or Certification requirements will also be included; these systems may include lighting, heating, cooling, etc. It is planned to use products from eGauge to complete the submetering.

Photovoltaic generation system(s) are planned to be installed as part of the construction, or as a budget alternate. The anticipated size of the photovoltaic system is 21kW and the specific installation plan and restrictions/limitations will be coordinated during the design. Electric Utility Service provider (Gunnison County Electric Association (GCEA)) has limitations on the overall size (kW) of interconnected generation as well as total energy production/offset (kWh) of these systems that must be reevaluated at the time of the design.

Systems

Data and A/V systems will be designed and specified according to the input from the owner. This will include data ports in all offices, sleeping rooms, etc. It will also include wireless access points (WAP's) at strategic areas of the building to provide access as well as a cellular repeater system. All Data and AV systems will be routed in Cat 6A cable. The pathways will consist of a star pattern with each data drop consisting of a cable from the IT room to the outlet.

Access control will be installed as directed by the owner. Wiring will be accomplished via Cat 6A cabling or per manufacturers recommendations. Exterior proximity devices with extended reach will be installed at selected doors and gates to allow entry.

Cameras will be installed around and inside the building as directed by the owner. Wiring will be done using Cat. 6A wire.

Coordination during the design for Station Alerting system(s) may include specialty LED red lighting for Crew Member alerting, PA/Speaker or Paging for alerting or information. Vehicle apparatus bays shall be equipped with a shore power connection that has break-away capabilities.

END OF MECHANICAL/ELECTRICAL NARRATIVE

10. Fire Protection

Shaner Life Safety
PO Box 522, Salida, CO 81201
970.409.9082; DSHANER@SHANERLIFESAFETY.COM

Crested Butte Fire Protection District Headquarters
Fire Protection/Fire Alarm Schematic Design Report
June 14, 2023

Prepared by: Deborah Shaner, P.E., Fire Protection Engineer

The Crested Butte Fire Protection District (CBFPD) Headquarters building will be provided with fire alarm and fire protection systems in accordance with the following standards:

- NFPA 72, National Fire Alarm & Signaling Code
- NFPA 13, Standard for the Installation of Sprinkler Systems
- NFPA 1142, Standard on Water Supplies for Suburban and Rural Firefighting
- Crested Butte Fire Protection District Amendments

The following outlines the design criteria for the Fire Protection, Fire Alarm and Emergency Responder Radio Coverage systems.

Fire Protection

Fire Sprinklers

The building will be fully sprinklered. The system will consist of a wet pipe sprinkler system in the Office, Training and Quarters areas of the building. A dry pipe zone will be designed for the Apparatus Bays. A 6" sprinkler line is recommended. The system will be designed in accordance with NFPA 13 and consist of Light Hazard and Ordinary Hazard classifications.

The approximated system demand is:

Sprinkler System flow: 400 gpm
Hose Stream: 250 gpm
Total: 650 gpm
Approximate pressure demand: 60 psi

Water Supply

Water supply for both firefighting use and fire sprinkler demand is required.

NFPA 1142 will provide the basis of design for the site firefighting water supply. Two sources are planned. The first is a working hydrant within 1000' of the project site. This hydrant will be tested and evaluated during Design Development. The second is a dry hydrant in the river. The location of this

hydrant will be coordinated with CBFPD. The site's target fire flow is 1000 gpm, the maximum required by NFPA 1142. This water supply will satisfy the hose stream demand from NFPA 13.

Fire sprinkler demand will be met using a single water supply for both HQ and SAR. A storage cistern of approximately 24,000 gallons will be buried near the HQ building. A room will be provided at the HQ building for a fire pump and sprinkler riser. Using a vertical turbine pump with a vault under the pump room, pressure for both the HQ and SAR sprinkler system will be provided. A zone will be provided for the SAR building. Note that sprinkler piping cannot be buried without access, so a pipe chase will be required between HQ and SAR to serve the SAR sprinkler zone. The pump will be powered in accordance with NFPA 20. Refer to Electrical and Civil for more information.

Fire Alarm

The Headquarters Building will be outfitted with a fire alarm system consisting of the following:

- Addressable fire alarm control panel (FACP)
- Occupant notification through horns and strobes in accordance with NFPA 72 in common use areas
- Combination smoke/CO detectors with low frequency sounder bases in residential quarters
- Smoke detector at the FACP
- Manual pull station at FACP
- Sprinkler system supervision through waterflow and tamper switches
- Weatherproof horn/strobe on the exterior of the building at 10' above finished grade at the fire department connection
- HVAC Interface for shutdown of fans over 2000 cfm
- LCD Annunciator at front entry

The fire alarm systems for the two buildings on site (Headquarters and Search and Rescue) will be networked together for the purposes of annunciation and monitoring. The network will require a single conduit between the buildings with a fiber or cable connection between the two fire alarm control panels.

Emergency Responder Radio Coverage

This project requires Emergency Responder Radio Coverage (ERRC). Testing shall be completed after initial building construction to determine functionality of emergency responder radios. If testing fails, an ERRC system will be installed. This system shall meet the requirements outlined in Section 510 of the 2021 IFC and shall be tested in accordance with Crested Butte Fire Protection District requirements.

11. Project Team

Owner:	**Crested Butte Fire Protection District (CBFPD)** Sean Caffrey, Chief Executive Officer & Commissioner 306 Maroon Ave. Crested Butte, CO 81224 970.349.5333
Owner Representative	**Goulding Development Advisors, LLC** Todd Goulding P.O. Box 2308 Edwards, CO 81632 970.331.1732
Architect of Record:	**BG+co.** Peter Icenogle, AIA 622 Rood Avenue Grand Junction, CO 81501 970-242-1058
Design Architect:	**TCA Architecture and Planning** Brian Harris 6211 Roosevelt Way, Northeast Seattle, Wa 98775 206.522.3830
Civil Engineering/Land Surveyor:	**SGM** Jerry Burgess 103 West Tomichi Ave, Suite A Gunnison, Co 81230 970.641.5355
Landscape Architecture:	**Sprout Studio, Inc.** Margaret Loperfido 523 Riverland Drive, Unit 3b / P.O. Box 4184 Crested Butte, Co 81224 970.349.8959
Structural Engineer:	**Martin / Martin** Sean Molloy 0101 Fawcett Road, Suite 260 Avon, Co 81620 970.445.2470
Mechanical and Electrical Engineering:	**Bighorn Consulting Engineers** Shawn Brill 386 Indian Road Grand Junction, CO 81501 970-241-8709

Construction Management:	**FCI Constructors, Inc.** Brian Young P.O. Box 1767 (81502) 3070 I-70 B, Bldg. A Grand Junction, CO 81504 970.434.9093

Specialty Consultants Provided By Owner

Geotechnical Analysis	**Cesare,Inc. d/b/a CMT Technical Services - Colorado** Darin R. Duran, P.E. 116 Halleys Ave Poncha Springs, CO 81242 Phone: 303-220-0300
Entitlements	**Mauriello Planning Group, LLC** Dominic F. Mauriello, AICP Brian Young PO Box 4777 2205 Eagle Ranch Road Eagle, Colorado 81631 970-376-3318 cell
Aquatic Resource Analysis	**Bio-Environs, LLC** Tim Lapello 970.641.8749

12. Architectural Program

Refer to Appendix A for the current architectural program including a comparison of the initial program against the current Schematic Design spaces.

CBFPD HQ ROOM SCHEDULE		
NUMBER	NAME	AREA
FIN FLR 1		
-	CORRIDOR	803 SF
-	CORRIDOR	380 SF
-	ELEVATOR	49 SF
-	CORRIDOR	492 SF
100	VESTIBULE	74 SF
101	LOBBY	492 SF
102	PUBLIC RR	52 SF
103	PUBLIC RR	52 SF
104	TRAINING ROOM	1,358 SF
105	TABLE STORAGE	70 SF
106	DOMESTIC WATER	300 SF
107	FIRE PUMP	166 SF
108	RECEPTION	102 SF
109	FP OFFICE	180 SF
110	FIRE MARSHAL OFFICE	120 SF
111	TRAINING OFFICE	168 SF
112	CAPT OFFICE	120 SF
113	IT/ELEC	102 SF
114	CREW WORKSPACE	256 SF
115	ADA RR	70 SF
116	FITNESS ROOM	868 SF
117	STORAGE	88 SF
118	JAN	31 SF
119	SLEEPING RM 1	78 SF
120	SLEEPING RM 2	78 SF
121	SLEEPING RM 3	78 SF
122	SLEEPING RM 4	78 SF
123	SLEEPING RM 5	78 SF
124	SLEEPING RM 6	80 SF
125	LAUNDRY	86 SF
126	MED STOR	94 SF

127	ADA SHOWER	94 SF
128	SHOWER	86 SF
129	DECON	120 SF
130	CLEANING	138 SF
131	TURNOUT GEAR	615 SF
132	ADA SHOWER	94 SF
133	DECON SHOWER	64 SF
134	WATER	78 SF
135	APPARATUS BAYS	6548 SF
136	MAINT OFFICE	136 SF
137	PARTS	105 SF
138	SHOP	135 SF
138	SHOP	135 SF
139	WASH ALCOVE	83 SF
140	HOSE STORAGE	213 SF
141	COMPRESSOR	59 SF
142	SCBA	167 SF
143	ELECTRICAL	104 SF
FIN FLR 2		
-	SEATING	128 SF
-	CORRIDOR	144 SF
200	KITCHEN	563 SF
201	DAYROOM	738 SF
202	ADA RR	59 SF
203	RESTROOM	52 SF
204	HR OFFICE	168 SF
205	EXEC OFFICE	174 SF
206	CHIEF OFFICE	174 SF
207	DISTRICT MGR OFFICE	174 SF
208	CONF ROOM	399 SF
209	COPY	137 SF
210	RECORD STORAGE	125 SF
211	ADMIN OFFICE	147 SF
212	SEASONAL STORAGE	198 SF
212	JAN	26 SF
213	TRAINING	409 SF
214	UNIFORM STORAGE	202 SF
215	MECHANICAL	183 SF

13. List of Drawings

Refer to Appendix B for the following drawing sheets from the Schematic Design Package:

G0-1 Title Sheet
G1-1 Life Safety Plan
AS-1 Architectural Site Plan
A1-1 Floor Plan – Level 1
A1-2 Floor Plan – Level 2
A1-3 Roof Plan
A2-1 Exterior Elevations

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053100	Steel Decking
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081416	Flush Wood Doors
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122400	Window Shades - MechoShade Systems
123200	Manufactured Wood Casework
123600	Countertops
129313	Bicycle Racks

DIVISION 14 - CONVEYING EQUIPMENT

142400	Hydraulic Elevators

DIVISION 33 – UTILITIES

33 16 00	Storage Tanks
33 21 00	Water Supply Wells

APPENDIX A

VICINITY MAP

TRUE NORTH

NEW EMERGENCY CENTER CAMPUS
CRESTED BUTTE FIRE PROTECTION DISTRICT
CENTERAL ADMIN, FIRE, AND EMERGENCY SERVICES (HQ)

CR 317 AND SLATE RIVER, GUNNISON COUNTY, CO (NORTH CRESTED BUTTE)

BG+co. PROJECT # 22033_2

02/08/2023 90% SCHEMATIC DESIGN
06/14/2023 100% SCHEMATIC DESIGN

100% SCHEMATIC DESIGN
ARCHITECTURAL

PROJECT DESIGN TEAM

ARCHITECTURE / INTERIOR DESIGN:
BG+co.
Architecture
Interior Design
Project Management
BLYTHE GROUP + co.

TCA
ARCHITECTURE + PLANNING + DESIGN
6211 ROOSEVELT WAY NE
SEATTLE, WA 98115
(206) 522-3830

in association with:

CIVIL ENGINEERING:
SGM
103 W TOMICHI AVE, SUITE A
GUNNISON, CO 81230
(970) 641-5355

LANDSCAPE ARCHITECTURE:
sproutstudio
growing community + preserving resources
PO BOX 4184
CRESTED BUTTE, CO 81224
(970) 349-8959

STRUCTURAL ENGINEERING:
MARTIN/MARTIN CONSULTING ENGINEERS
77 METCALF ROAD, SUITE 301
AVON, CO 81620
(970) 926-6007

MECHANICAL, PLUMBING AND ELECTRICAL ENGINEERING:
Bighorn Consulting Engineers, Inc.
366 Indian Road
Grand Junction, CO 81501
Phone (970) 241-6700
151 W 11th Street #108-C
Durango, CO 81301
Phone (970) 403-7676

MATERIALS LEGEND

- EXISTING CONSTRUCTION
- ASPHALT PAVING (SECTION)
- EARTH (PLAN & SECTION)
- GRANULAR FILL (SECTION)
- STRUCTURAL FILL (SECTION)
- SAND (SECTION)
- CONCRETE (PLAN & SECTION)
- BRICK VENEER (SECTION)
- CONCRETE MASONRY UNITS (CMU) (PLAN & SECTION)
- PRECAST CONCRETE (SECTION)
- MORTAR NET (SECTION)
- STEEL (SECTION)
- WOOD BLOCKING (CONTINUOUS) (SECTION)
- WOOD BLOCKING (INTERMITTENT) (SECTION)
- WOOD SHEATHING
- WOOD (FINISH) (SECTION & ELEVATION)
- INSULATION (FIBROUS) (PLAN & SECTION)
- INSULATION (RIGID) (PLAN & SECTION)
- STUCCO (SECTION)
- STUCCO (ELEVATION)
- GYPSUM WALL BOARD (GWB) (REFLECTED CEILING PLAN)

NOTE: SOME MATERIALS SHOWN MAY NOT BE USED ON THIS PROJECT.

SYMBOLS LEGEND

- ROOM TAG — ROOM NAME / A202A
- DOOR TAG — D220A
- ASSEMBLY TAG — 27
- NEW COLUMN GRID LINE — 0
- EXISTING COLUMN GRIDLINE — 0
- KEY NOTE — ?
- WINDOW / FRAME TYPE — #
- DRAWING REFERENCE — 1 / A1-1 — VIEW NAME — 1/8" = 1'-0"
- BUILDING SECTION INDICATOR — ELEVATION OR DETAIL NUMBER / 00 / A0-00 / SHEET THAT DETAIL IS ON / SIM / POINTS IN DIRECTION OF DETAIL
- WALL SECTION INDICATOR — ELEVATION OR DETAIL NUMBER / 00 / A0-00 / SHEET THAT DETAIL IS ON / SIM / POINTS IN DIRECTION OF DETAIL
- SIGN TAG — ID type
- ELEVATION INDICATOR — Name / Elevation
- DIMENSION LINES — 1"
- NEW CONTOUR — ####
- EXISTING CONTOUR — ####
- HIDDEN LINE
- OVERHEAD OBJECT
- CENTER LINE
- MATCH LINE
- LIMITS OF CONSTRUCTION
- DEMOLISHED ITEMS

ABBREVIATIONS

ADD-X	ADDENDUM NO. X
AFF	ABOVE FINISH FLOOR
AHU	AIR HANDLING UNIT
AL	ALUMINUM
ALT	ALTERNATE
ALT-X	ALTERNATE NO. X
AM	ACOUSTIC MATERIAL
AM-X	ACOUSTIC MATERIAL TYPE X
ARCH	ARCHITECT / ARCHITECTURAL
ATTEN	ATTENUATION
AVE	AVENUE
AVG	AVERAGE
B.O.	BOTTOM OF
BIT	BITUMINOUS
BLDG	BUILDING
BLKG	BLOCKING
C/L	CENTER LINE
CEM	CEMENT / CEMENTITIOUS
CJ	CONTROL JOINT
CLG	CEILING
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT(S)
CONC	CONCRETE
CONT	CONTINUOUS
CPT	CARPET
CT	CERAMIC TILE
CTR	CENTER
D	DEEP / DEPTH
DBL	DOUBLE
DEMO	DEMOLISH / DEMOLITION
DEPT	DEPARTMENT
DF	DRINKING FOUNTAIN
DIA / Ø	DIAMETER
DIM(S)	DIMENSION(S)
DN	DOWN
DTL	DETAIL
DW	DISHWASHER
DWG	DRAWING
EA	EACH
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC	ELECTRICAL
EQ	EQUAL
EQUIP	EQUIPMENT
EWC	ELECTRIC WATER COOLER
EXIST	EXISTING
EXT	EXTERIOR
F.O.	FACE OF
FAAB	FLUID APPLIED AIR BARRIER
FAAP	FIRE ALARM ANNUNCIATOR PANEL
FACP	FIRE ALARM CONTROL PANEL
FBO	FURNISHED BY OWNER
FD	FLOOR DRAIN
FDN	FOUNDATION
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER CABINET
FF	FINISHED FLOOR
FFIN	FACTORY FINISH
FRP	FIBERGLASS REINFORCED PLASTIC
FTG	FOOTING
FURN	FURNISHING / FURNITURE
GA	GAGE
GALV	GALVANIZED
GL	GLAZING
GL-X	GLAZING TYPE X
GWB	GYPSUM WALL BOARD
H	HIGH / HEIGHT
HC	HANDICAPPED
HDW	HARDWARE
HDWD	HARDWOOD
HM	HOLLOW METAL
HORIZ	HORIZONTAL
HVAC	HEATING VENTILATING & AIR CONDITIONING
IBC	INTERNATIONAL BUILDING CODE
ID	INSIDE DIAMETER
INCL	INCLUDED
INSUL	INSULATION
INT	INTERIOR
JT	JOINT
L	LONG / LENGTH
LAV	LAVATORY
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
MAS	MASONRY
MATL	MATERIAL
MAX	MAXIMUM
MECH	MECHANICAL
MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
MO	MASONRY OPENING
MTD	MOUNTED
MTL	METAL
NA	NOT APPLICABLE
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NIC	NOT IN CONTRACT
NO.	NUMBER
NRC	NOISE REDUCTION COEFFICIENT
NTS	NOT TO SCALE
OC	ON CENTER
OD	OUTSIDE DIAMETER
OPNG	OPENING
OPP	OPPOSITE
PERF	PERFORATED
PLAM	PLASTIC LAMINATE
PLBG	PLUMBING
PLYWD	PLYWOOD
PNT	PAINT
PREFAB	PREFABRICATED
PREFIN	PREFINISHED
PT	PORCELAIN TILE
QT	QUARRY TILE
QTY	QUANTITY
R	RADIUS
RB	RUBBER BASE
RCP	REFLECTED CEILING PLAN
REF	REFERENCE / REFER TO
REFR	REFRIGERATOR
REINF	REINFORCE (D) (ING)
REQD	REQUIRED
RES	RESILIENT
RO	ROUGH OPENING
ROW	RIGHT OF WAY
RTU	ROOF TOP UNIT
SC	SEALED CONCRETE
SCHED	SCHEDULE (D)
SECT	SECTION
SF	SQUARE FEET
SFT	STORE FRONT
SIM	SIMILAR
SPEC	SPECIFICATION
SQ	SQUARE
SS	STAINLESS STEEL
SSM	SOLID SURFACE MATERIAL
STL	STEEL
STN	STAIN
STRUCT	STRUCTURAL
SV	SHEET VINYL
T&G	TONGUE & GROOVE
T.O.	TOP OF
TEMP	TEMPORARY
TV	TELEVISION
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
VCT	VINYL COMPOSITION TILE
VERT	VERTICAL
VFY	VERIFY
VIF	VERIFY IN FIELD
VWC	VINYL WALL COVERING
W	WIDE / WIDTH
W/	WITH
W/O	WITHOUT
WD	WOOD
WOM	WALK OFF MAT

INDEX TO DRAWINGS

ACCEPTANCE

I have received and reviewed the attached 100% Schematic Design package from the BG + co. I have found it to be acceptable and to meet the requirements of this project phase. I hereby authorize the BG + co. and their team of Consultants to proceed to finalize the Schematic Design phase of the project.

This document is intended to create awareness of the impact to both design and construction schedules and design fees should major design changes occur after this phase.

Approved to proceed to finalize the Schematic Design Phase:

Owner / Owner's Representative — Date

BG+co.
Architecture
Interior Design
Project Management
BLYTHE GROUP + co.

TCA
ARCHITECTURE + PLANNING + DESIGN

CRESTED BUTTE FIRE PROTECTION DISTRICT HQ

CR 317 AND SLATE RIVER
GUNNISON COUNTY, CO

TITLE SHEET

SCHEMATIC DESIGN

REVISIONS DATE:

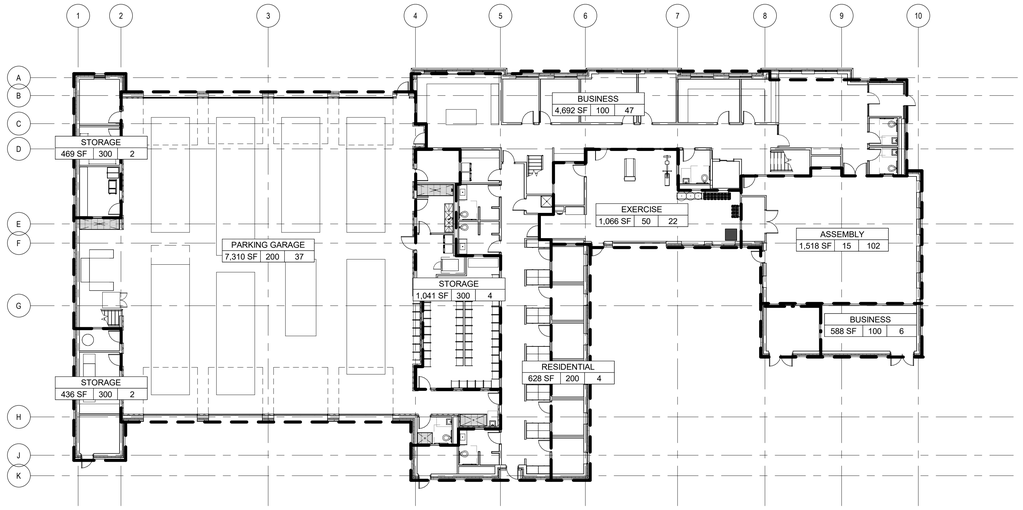
DATE: 06/14/2023

PROJECT #: 22033_2

SHEET #:

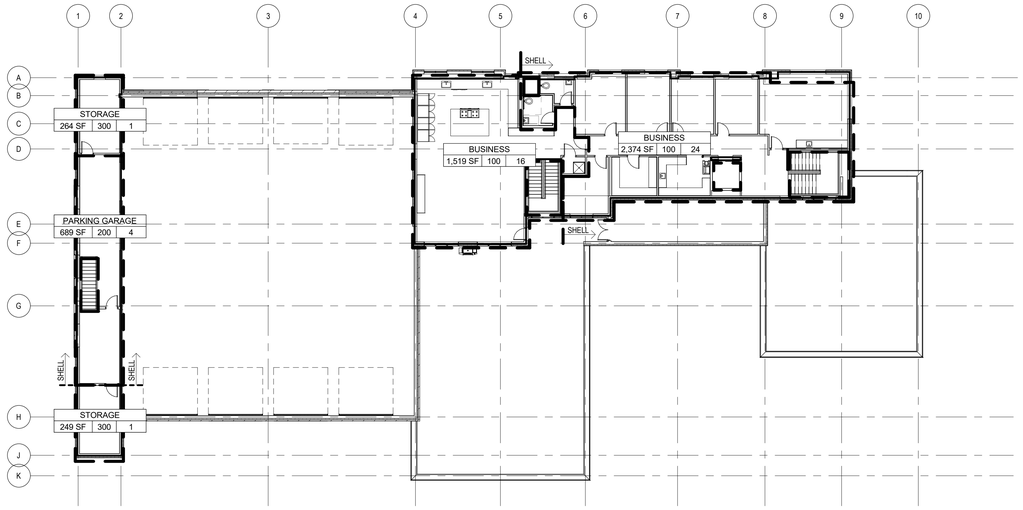
G0-1

Project Team:
Print Date: 6/13/2023 4:57:56 PM



1 G1-1 FIN FLR 1
1/16" = 1'-0"

OCCUPANT LOAD					
OCCUPANCY TYPE	OCCUPANCY GROUP	AREA	OLF	OCCUPANT LOAD	COMMENTS
FIN FLR 1					
	BUSINESS	588 SF	100	6	
		588 SF			
B	BUSINESS	4,692 SF	100	47	FINISH
R-3	RESIDENTIAL	628 SF	200	4	FINISH
A-3	ASSEMBLY	1,518 SF	15	102	FINISH
B	EXERCISE	1,066 SF	50	22	FINISH
S-1	STORAGE	1,041 SF	300	4	FINISH
S-2	PARKING GARAGE	7,310 SF	200	37	FINISH
S-1	STORAGE	469 SF	300	2	FINISH
S-1	STORAGE	436 SF	300	2	FINISH
FINISH		17,160 SF			
FIN FLR 1		17,748 SF			
FIN FLR 2					
B	BUSINESS	1,519 SF	100	16	FINISH
S-1	STORAGE	249 SF	300	1	FINISH
FINISH		1,768 SF			
S-2	PARKING GARAGE	689 SF	200	4	SHELL
S-1	STORAGE	264 SF	300	1	SHELL
B	BUSINESS	2,374 SF	100	24	SHELL
SHELL		3,327 SF			
FIN FLR 2		5,095 SF			
Grand total		22,843 SF			



2 G1-1 FIN FLR 2
1/16" = 1'-0"

LIFE SAFETY PLAN LEGEND

- 1 HR FIRE SEPARATION
- 2 HR FIRE SEPARATION
- CONSTRUCTION CAPABLE OF RESISTING THE PASSAGE OF SMOKE
- OCCUPANCY GROUP BOUNDARY
- EGRESS ROUTE (CONTINUATION OF EGRESS PATH; COMMON PATH OF EGRESS)
- MATCH LINE
- LIMIT OF CONSTRUCTION
- EXIT LOAD
- FIRE EXTINGUISHER
- DIRECTION OF EGRESS
- EMERGENCY EXIT LIGHT
- EXIT LOAD — DIRECTION OF TRAVEL
- REQUIRED WIDTH (INCHES) — 6 / 36 / 0.00
- ACTUAL WIDTH (INCHES)
- COMMON PATH OF EGRESS TRAVEL — CPET = 30' / EATD = 132'
- EXIT ACCESS TRAVEL DISTANCE
- OCCUPANCY GROUP — S-2
- USE — STORAGE
- AREA — 250 | 100 | 3 — OCCUPANT LOAD / OCCUPANT LOAD FACTOR

NOTE: SOME SYMBOLS SHOWN MAY NOT BE USED ON THIS PROJECT.

BUILDING CODE ANALYSIS

CODE JURISDICTION:
2018 IBC

OCCUPANCY:
A: B: R-3: S-1: S-2

OCCUPANT LOADS:
A =102: B=109:R-3=4: S-1=10 : S-2=41

CONSTRUCTION TYPE:
CONSTRUCTION TYPICAL OF TYPE VB.

AUTOMATIC SPRINKLER SYSTEM:
WILL BE PROVIDED

BUILDING AREA:
ACTUAL TOTAL BUILDING: 22,843 SF
ALLOWED [IBC 506.1] 27,000 SF

BUILDING HEIGHT:
ACTUAL HEIGHT: 38'-0" AFF, 2 STORIES
ALLOWABLE HEIGHT: 3 STORIES [IBC 504]; ___ STORIES PER GJ Z&D

FIRE RESISTANCE RATING REQUIREMENTS:
(FOR TYPE VB CONSTRUCTION) [IBC TABLE 601]
STRUCTURAL FRAME: 0 HRS
BEARING WALLS, EXTERIOR: 0 HRS
BEARING WALLS, INTERIOR: 0 HRS
NON-BEARING WALLS, EXTERIOR: 0 HRS*
*1 HR IF < 10 FT FIRE SEPARATION DISTANCE [IBC TABLE 602]
NON-BEARING WALLS, INTERIOR: 0 HRS
FLOOR CONSTRUCTION: 0 HRS
ROOF CONSTRUCTION: 0 HRS

EXIT TRAVEL DISTANCE:
FOR B OCCUPANCY:
COMMON PATH OF EGRESS TRAVEL: 100 FT WITH SPRINKLER SYSTEM [IBC TABLE 1006.2.1]
EXIT ACCESS TRAVEL DISTANCE: 300 FT WITH SPRINKLER SYSTEM [IBC TABLE 1017.2]

FOR R-3 OCCUPANCY:
COMMON PATH OF EGRESS TRAVEL: 125 FT WITH SPRINKLER SYSTEM [IBC TABLE 1006.2.1]
EXIT ACCESS TRAVEL DISTANCE: 250 FT WITH SPRINKLER SYSTEM [IBC TABLE 1017.2]

FOR A OCCUPANCY:
COMMON PATH OF EGRESS TRAVEL: 75 FT WITH SPRINKLER SYSTEM [IBC TABLE 1006.2.1]
EXIT ACCESS TRAVEL DISTANCE: 250 FT WITH SPRINKLER SYSTEM [IBC TABLE 1017.2]

FOR S-1, S-2 OCCUPANCY:
COMMON PATH OF EGRESS TRAVEL: 100 FT WITH SPRINKLER SYSTEM [IBC TABLE 1006.2.1]
EXIT ACCESS TRAVEL DISTANCE: 400 FT WITH SPRINKLER SYSTEM [IBC TABLE 1017.2]

PLUMBING FIXTURE COUNT:

				WC'S		LAV		DF		SS
				REQ'D	PROV	REQ'D	PROV	REQ'D	PROV	REQ'D
PROV OCCUPANCY TYPE	OCC LD	MEN	WOMEN	M / W	M /W	M / W	M / W			
_____ ( )	___	___	___	_ /_	_ /_	_ /_	_ /_	_	_	_
_____ ( )	___	___	___	_ /_	_ /_	_ /_	_ /_	_	_	_
_____ ( )	___	___	___	_ /_	_ /_	_ /_	_ /_	_	_	_
TOTALS M / W				_ /_	_ /_	_ /_	_ /_			
UNISEX					___		___			
TOTAL FOR BUILDING				___	___	___	___	___	___	___

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CR 317 AND SLATE RIVER
GUNNISON COUNTY, CO

LIFE SAFETY PLAN

SCHEMATIC DESIGN

REVISIONS DATE:

DATE: 06/14/2023

PROJECT #: 22033_2

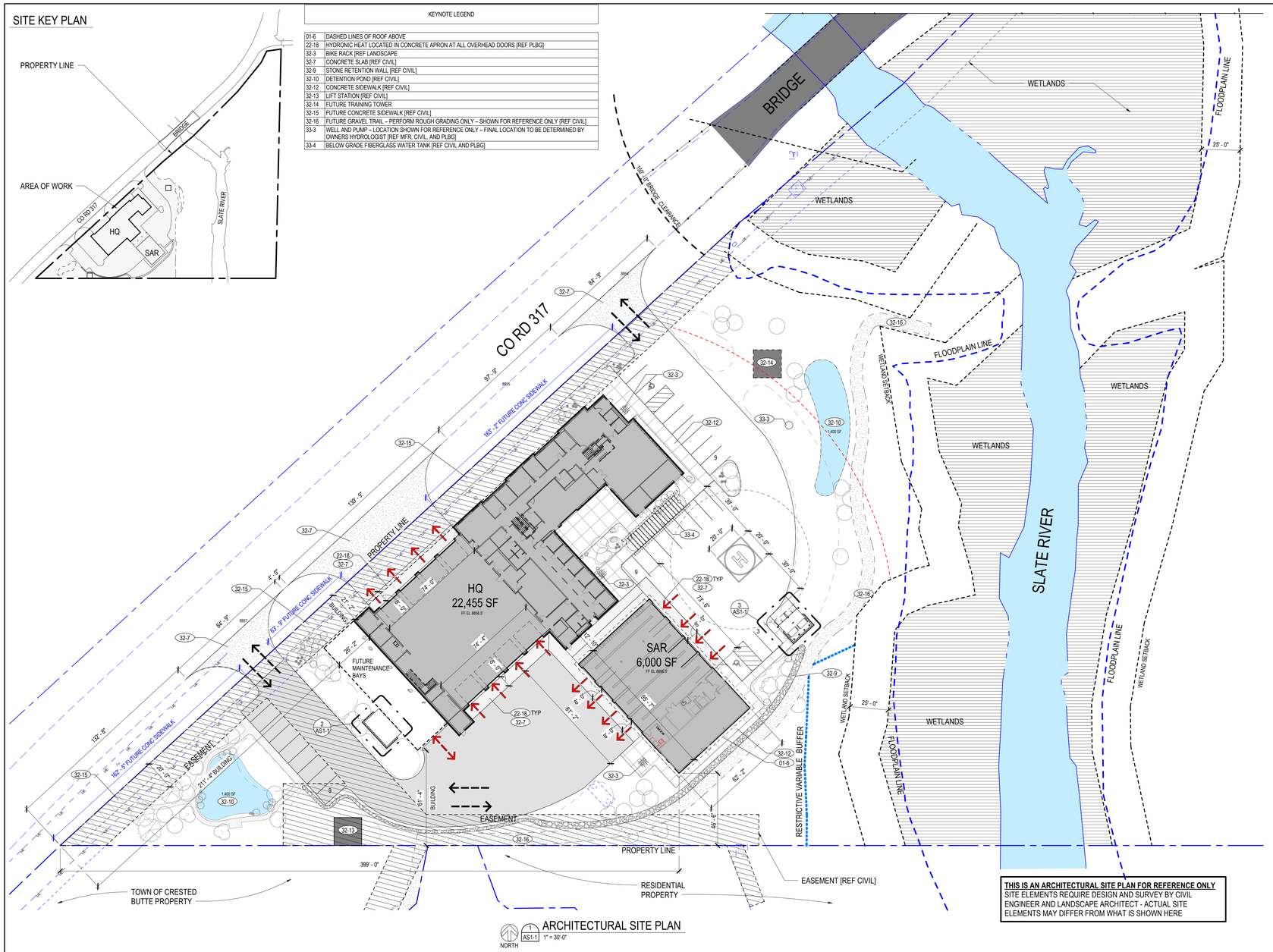
SHEET #:

G1-1

Project Team:
Print Date: 6/13/2023 4:57:56 PM

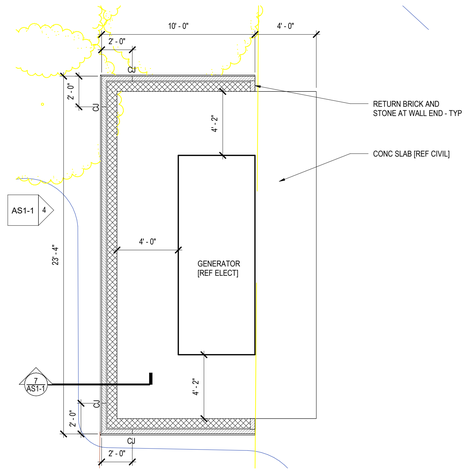
SITE KEY PLAN

KEYNOTE LEGEND	
01-6	DASHED LINES OF ROOF ABOVE
22-18	HYDRONIC HEAT LOCATED IN CONCRETE APRON AT ALL OVERHEAD DOORS [REF PLBG]
32-3	BIKE RACK [REF LANDSCAPE
32-7	CONCRETE SLAB [REF CIVIL]
32-9	STONE RETENTION WALL [REF CIVIL]
32-10	DETENTION POND [REF CIVIL]
32-12	CONCRETE SIDEWALK [REF CIVIL]
32-13	LIFT STATION [REF CIVIL]
32-14	FUTURE TRAINING TOWER
32-15	FUTURE CONCRETE SIDEWALK [REF CIVIL]
32-16	FUTURE GRAVEL TRAIL – PERFORM ROUGH GRADING ONLY – SHOWN FOR REFERENCE ONLY [REF CIVIL]
33-3	WELL AND PUMP – LOCATION SHOWN FOR REFERENCE ONLY – FINAL LOCATION TO BE DETERMINED BY OWNERS HYDROLOGIST [REF MFR, CIVIL, AND PLBG]
33-4	BELOW GRADE FIBERGLASS WATER TANK [REF CIVIL AND PLBG]

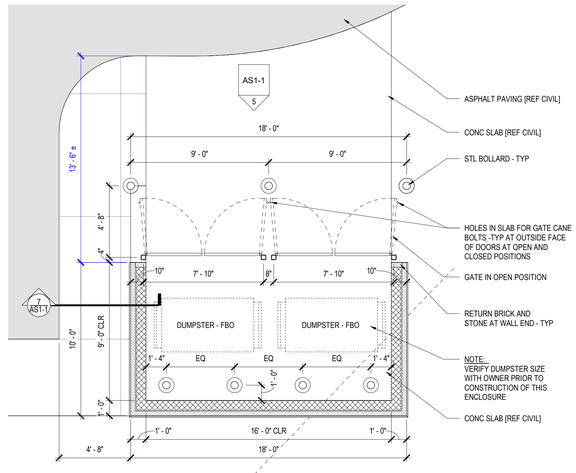


THIS IS AN ARCHITECTURAL SITE PLAN FOR REFERENCE ONLY
SITE ELEMENTS REQUIRE DESIGN AND SURVEY BY CIVIL ENGINEER AND LANDSCAPE ARCHITECT - ACTUAL SITE ELEMENTS MAY DIFFER FROM WHAT IS SHOWN HERE

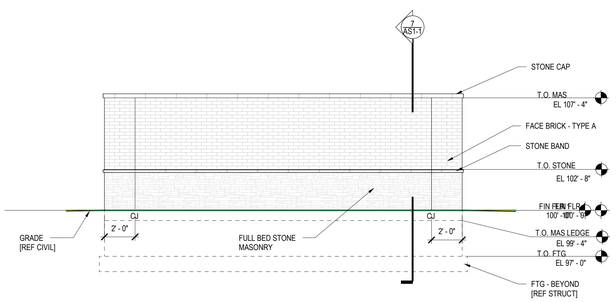
NORTH 1 AS1-1 ARCHITECTURAL SITE PLAN
1" = 30'-0"



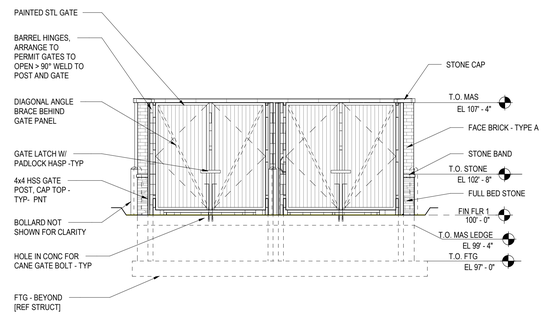
NORTH AS1-1 GENERATOR ENCLOSURE
1/4" = 1'-0"



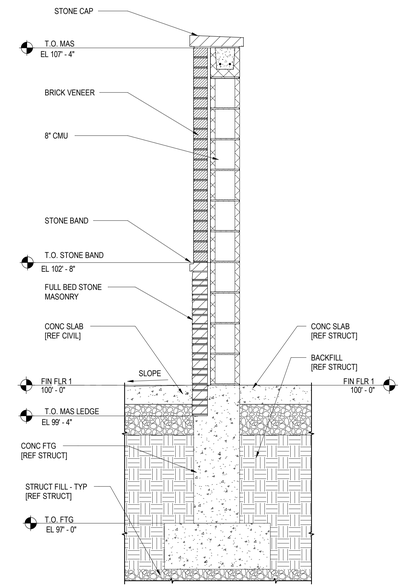
NORTH 3 AS1-1 TRASH ENCLOSURE
1/4" = 1'-0"



4 AS1-1 EXTERIOR ELEVATION
1/4" = 1'-0"



5 AS1-1 EXTERIOR ELEVATION
1/4" = 1'-0"



7 AS1-1 WALL SECTION
3/4" = 1'-0"

Project Team:
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CRESTED BUTTE FIRE PROTECTION DISTRICT

CRESTED BUTTE FIRE PROTECTION DISTRICT

CR 317 AND SLATE RIVER GUNNISON COUNTY, CO (NORTH CRESTED BUTTE)

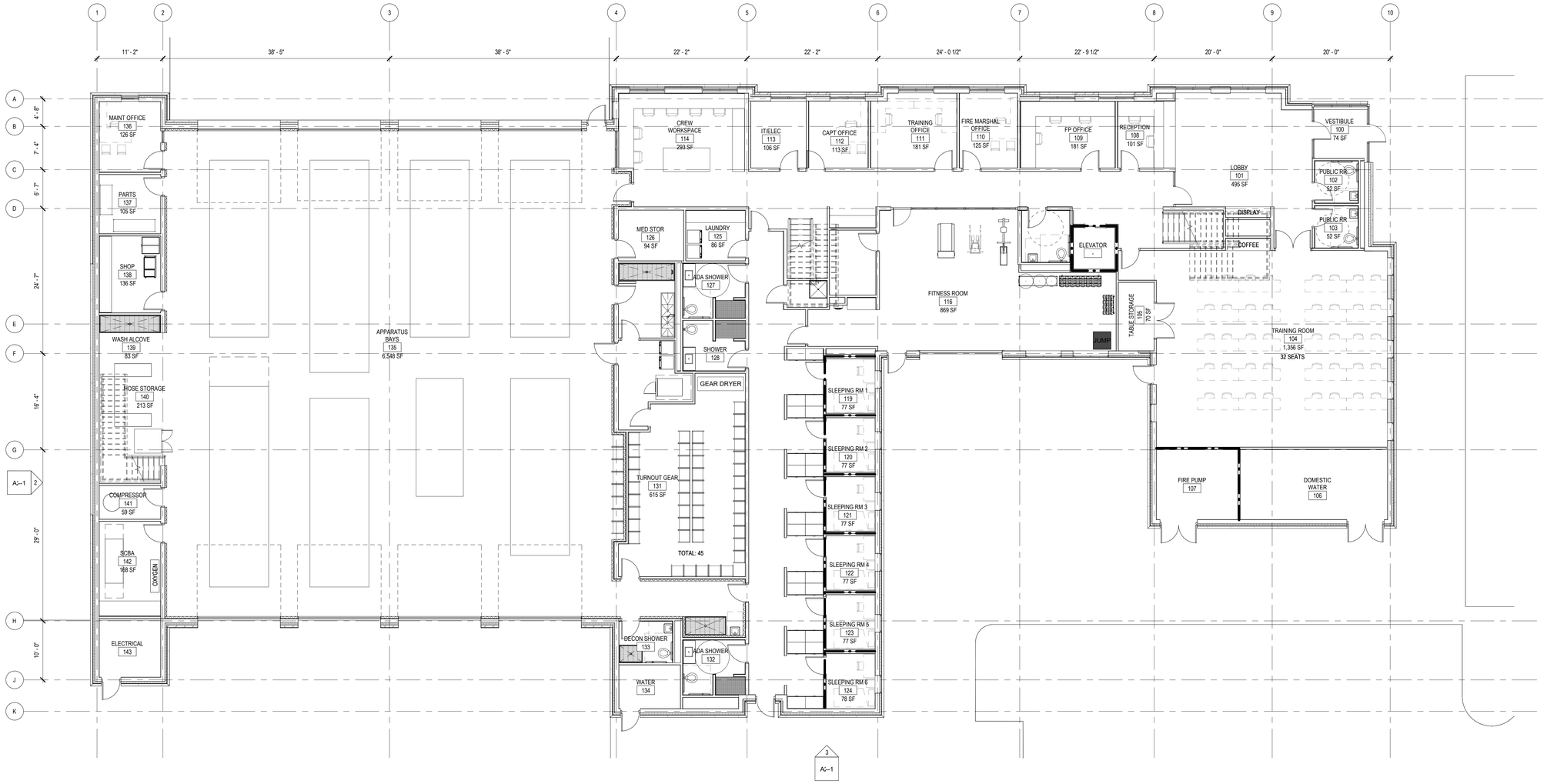
ARCHITECTURAL SITE PLAN

SCHEMATIC DESIGN

REVISIONS DATE:

DATE: 6/14/2023
PROJECT #: 22033_1
SHEET #:

AS1-1



1 A1-1 FLOOR PLAN
1/8" = 1'-0"

KEYNOTE LEGEND

LEGEND

EXIST WALL
NEW WALL
EXIST DOOR
NEW DOOR
NO ARCHITECTURAL RENOVATION WORK
NEW CMU WALL

GENERAL NOTES

1. ALL INTERIOR PARTITIONS ARE TYPE 1, UNO. REFERENCE ASSEMBLIES DRAWING FOR ADDITIONAL WALL TYPES & CONSTRUCTION.
2. WALLS LOCATED ON GRID LINES ARE CENTERED ON THE GRID LINE UNO.
3. INTERIOR DIMENSIONS ARE TO F.O. STUD, UNO.
4. EXTERIOR DIMENSIONS ARE TO F.O. STUD, MASONRY, OR CONC. UNO.
5. REFERENCE FINISH DRAWINGS FOR INTERIOR FINISHES.
6. DIMENSIONS TO EXISTING WALLS ARE TO FINISH FACE, UNO.
7. ALL ITEMS ARE NEW UNLESS NOTED AS EXISTING

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CR 317 AND SLATE RIVER
GUNNISON COUNTY, CO

FLOOR PLAN - LEVEL 1

SCHEMATIC DESIGN

REVISIONS DATE:

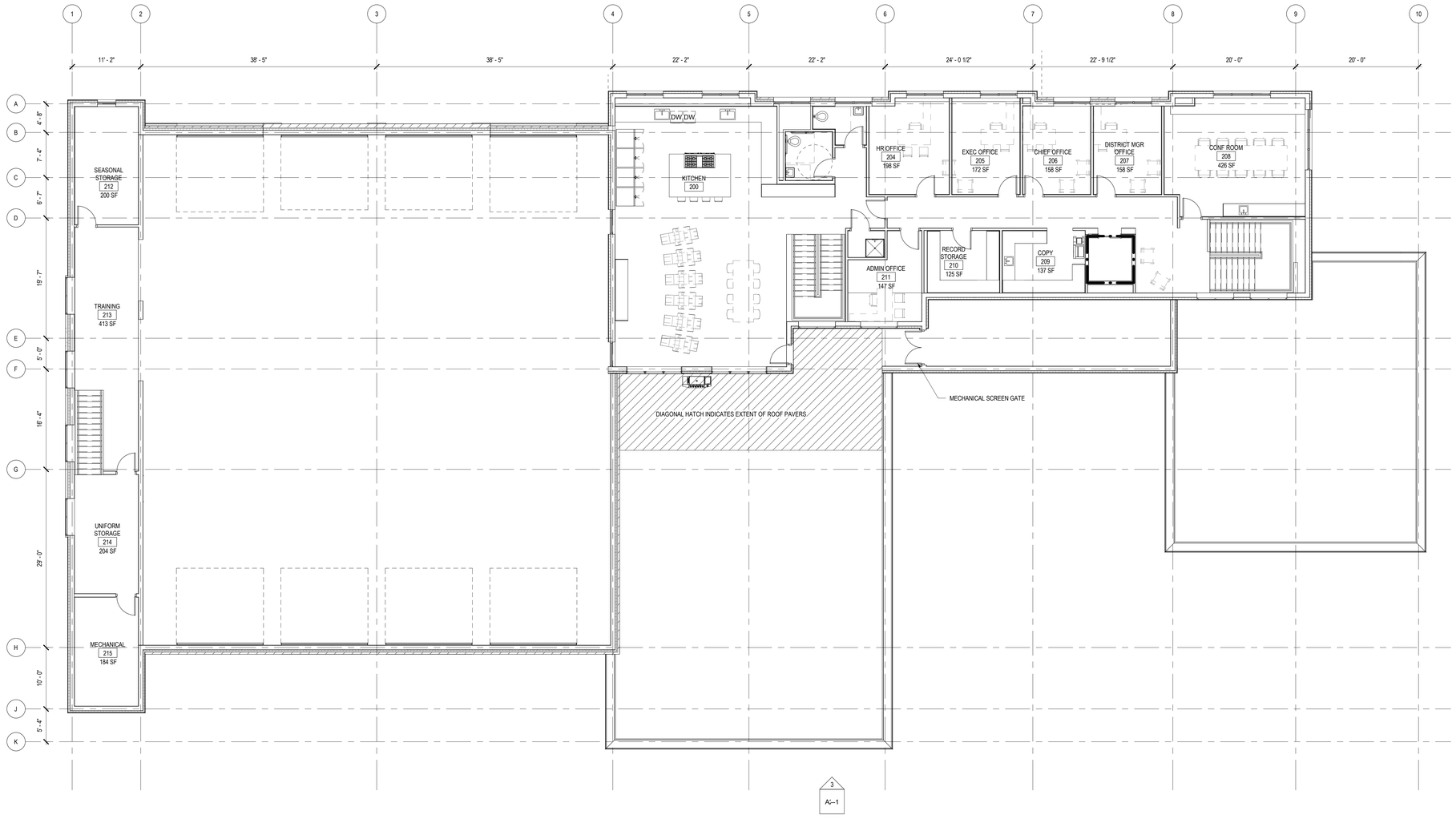
DATE: 06/14/2023

PROJECT #: 22033_2

SHEET #:

A1-1

Project Team:
Print Date: 6/13/2023 4:57:46 PM



1 / A1-2 FIN FLR 2

1/8" = 1'-0"

KEYNOTE LEGEND

LEGEND

EXIST WALL

NEW WALL

EXIST DOOR

NEW DOOR

NO ARCHITECTURAL RENOVATION WORK

NEW CMU WALL

GENERAL NOTES

1. ALL INTERIOR PARTITIONS ARE TYPE 1, UNO. REFERENCE ASSEMBLIES DRAWING FOR ADDITIONAL WALL TYPES & CONSTRUCTION.
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4. EXTERIOR DIMENSIONS ARE TO F.O. STUD, MASONRY, OR CONC, UNO.
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7. ALL ITEMS ARE NEW UNLESS NOTED AS EXISTING

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CR 317 AND SLATE RIVER
GUNNISON COUNTY, CO

FLOOR PLAN - LEVEL 2

SCHEMATIC DESIGN

REVISIONS DATE:

DATE: 06/14/2023

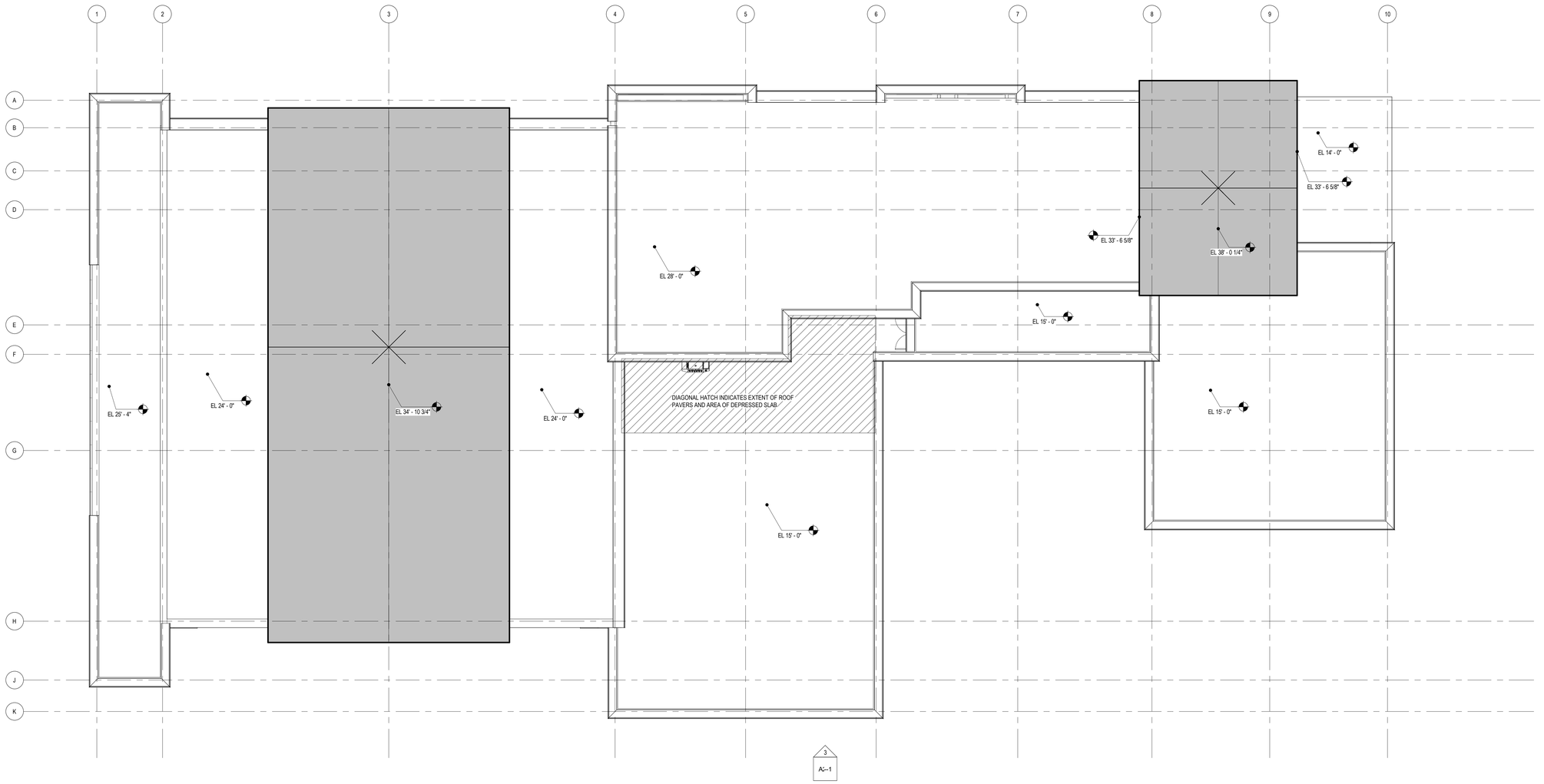
PROJECT #: 22033_2

SHEET #:

A1-2

Project Team:

Print Date: 6/13/2023 4:57:47 PM



1 A1-3 ROOF PLAN
1/8" = 1'-0"

Project Team:
Print Date: 6/13/2023 1:57:49 PM

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CRESTED BUTTE FIRE PROTECTION DISTRICT HQ

CR 317 AND SLATE RIVER
GUNNISON COUNTY, CO

ROOF PLAN

SCHEMATIC DESIGN

REVISIONS DATE:

DATE: 06/14/2023

PROJECT #: 22033_2

SHEET #:

A1-3

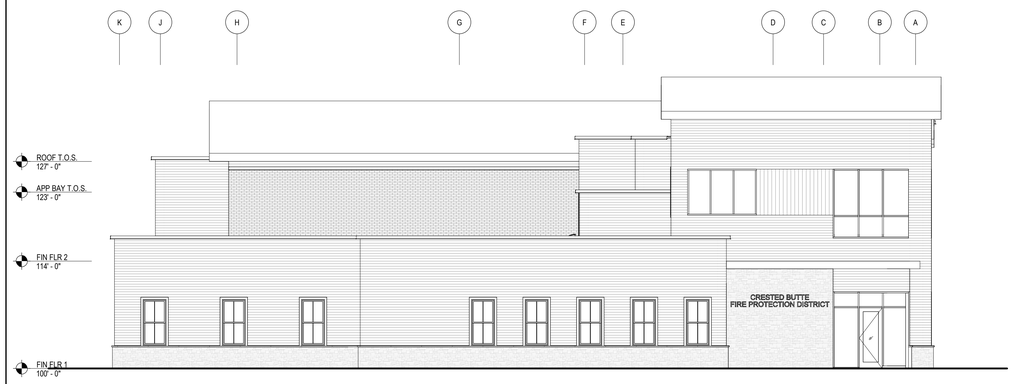
FOR PRICING REFERENCE ONLY - EXTERIOR DESIGN IS STILL IN PROCESS

EXTERIOR MATERIAL LEGEND

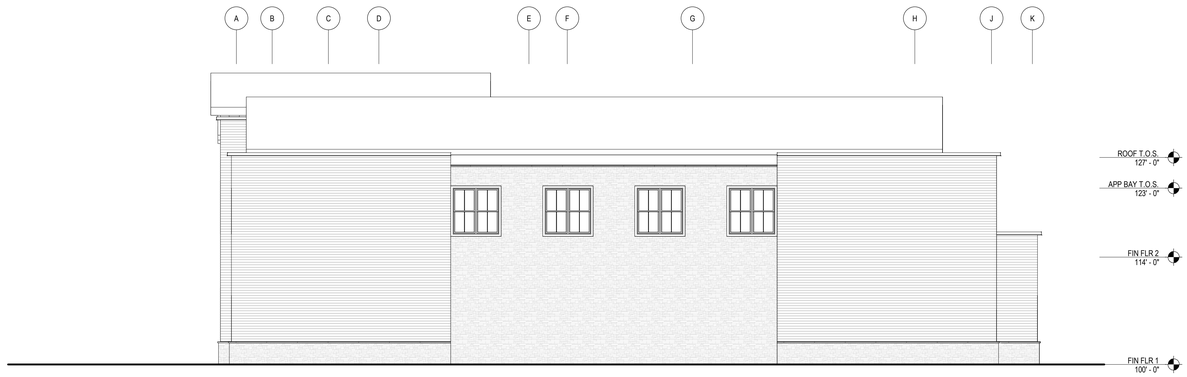
= STONE

= BRICK

= SIDING MATERIAL (HORIZONTAL AND VERTICAL)
1. RESYSTA COMPOSITE SIDING
2. AEPSPAN FLEX SERIES METAL PANEL
3. EQUITONE TECTIVA FIBER CEMENT SIDING
(NOTE MANUFACTURERS ARE LISTED FOR REFERENCE, OPEN TO ALTERNATES)



1 A2-1 NORTH ELEVATION
1/8" = 1'-0"



2 A2-1 SOUTH ELEVATION
1/8" = 1'-0"

3 A2-1 WEST ELEVATION
1/8" = 1'-0"

4 A2-1 EAST ELEVATION
1/8" = 1'-0"

Project Team:
Print Date: 6/13/2023 4:57:53 PM

BG+ co.
Architecture
Interior Design
Project Management
BLYTHE GROUP + co.

TCA
ARCHITECTURE + PLANNING + DESIGN

CRESTED BUTTE FIRE PROTECTION DISTRICT HQ

CR 317 AND SLATE RIVER
GUNNISON COUNTY, CO

EXTERIOR ELEVATIONS

SCHEMATIC DESIGN

REVISIONS DATE:

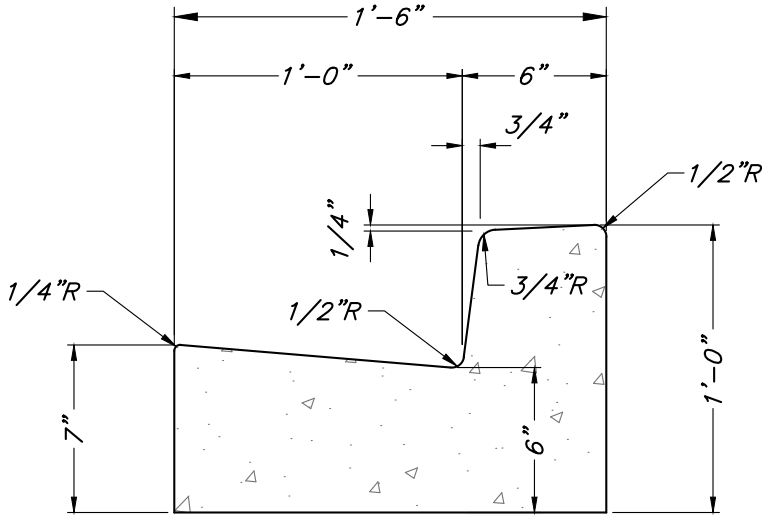
DATE: 06/14/2023

PROJECT #: 22033_2

SHEET #:

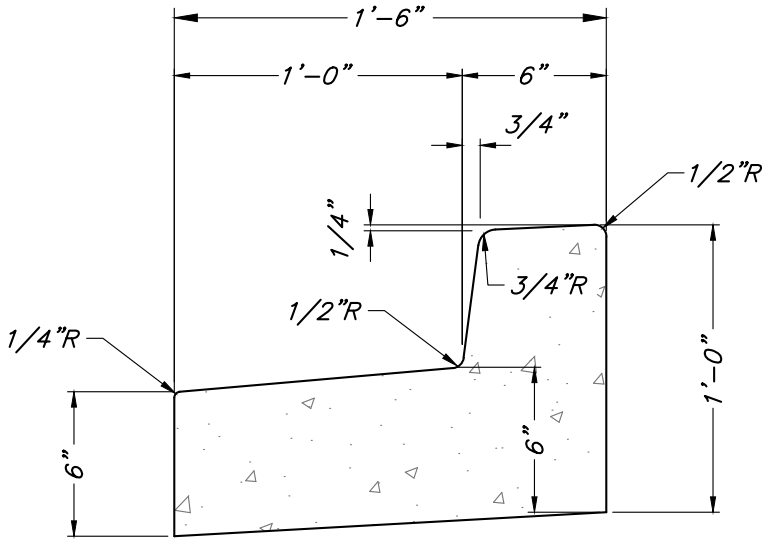
A2-1

APPENDIX B



18" CURB & GUTTER

SCALE: 1 1/2" = 1'–0"



INVERTED 18" CURB & GUTTER

SCALE: 1 1/2" = 1'–0"

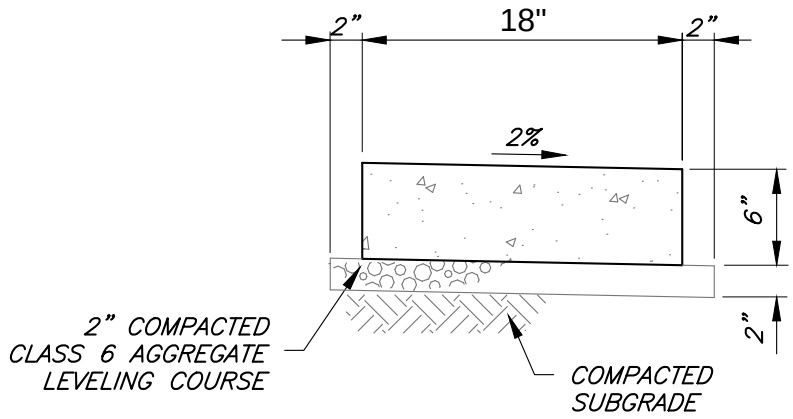
y:\AutoCAD\standard details\Concrete\extras\18 inch Standard Curb and Gutter.dwg

SGM
118 West Sixth Street, Suite 200
Glenwood Springs, CO 81601
970.945.1004 www.sgm-inc.com

Client
Location

Job No.	2017-100.001
Drawn by:	XX
Date:	11.15.17
QC: XX	PE: XX
File:	18 inch Standard Curb and Gutter

18 inch Standard
Curb and Gutter



CONCRETE SLAB

SCALE: 1"= 1'-0"

y:\AutoCAD\standard details\Concrete\20 inch Concrete Slab.dwg

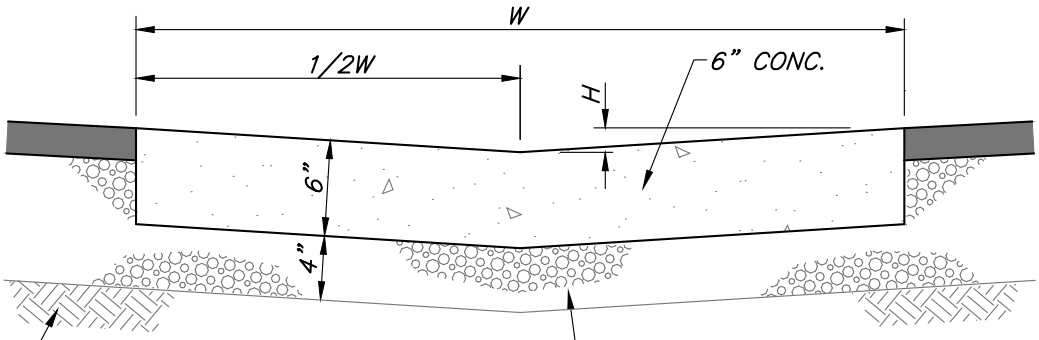
SGM
118 West Sixth Street, Suite 200
Glenwood Springs, CO 81601
970.945.1004 www.sgm-inc.com

Client
Location

Job No.	2017-100.001
Drawn by:	XX
Date:	11.15.17
Approved:	XX
PE:	XX
File:	20 inch Concrete Slab

18" inch Concrete Slab

Sht. 6
Of 0



WIDTH (W)	HEIGHT (H)
2 FT.	1.0 INCH
3 FT.	1.5 INCH
4 FT.	2.0 INCH
6 FT.	2.5 INCH
8 FT.	3.0 INCH

VALLEY PAN DETAIL

SCALE: 1"= 1'-0"

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SGM
118 West Sixth Street, Suite 200
Glenwood Springs, CO 81601
970.945.1004 www.sgm-inc.com

Client
Location

Job No.	2017-100.001
Drawn by:	XX
Date:	11.15.17
QC: XX	PE: XX
File:	Valley Pan Detail

Valley Pan Detail

Sht. 39
Of 0

Well Water & Pressure Booster Expansion Tanks

FXA Series

Wessels FXA series ASME Replaceable Hydropneumatic Bladder System with Smart Tank Add-On for Booster Expansion Pressure Control

APPLICATIONS

Open-loop

Potable

Pressure Booster

Well Water

Water

Wessels patented FXA Tanks are ASME replaceable bladder type pre-charged hydro-pneumatic tanks for commercial and industrial well and water systems, booster systems, or other non-heated potable water applications. They are designed to deliver water under pressure between pump cycles to provide sufficient flow to meet demands. The water is contained in a butyl bladder. All FXA tanks can be installed vertically or horizontally.

NEXT LEVEL INTELLIGENCE

- Pressure gauge integrated
- WessView® bladder integrity monitor included
- WessGuard® proximity sensor port adaptable
- Easy-access air valve
- Tamper-resistant secure guard mount
- Designed and fabricated in accordance with ASME Boiler & Pressure vessel code
- Products comply with NSF/ANSI Standard 61
- Replaceable heavy-duty butyl bladder (other materials available)
- Standard design pressure is 125 psi (8.6 bar)
- Available in carbon steel, 304 or 316L stainless steel
- Factory pre-charged and field adjustable
- Never waterlogs
- Separation of water and air
- Full flow design compatible
- Higher pressure ratings available
- Wessels Company Patented Design US 8,633,825 B2

SINCE 1908 wessels company

The Next Generation of Wireless Real-Time Alarm, Monitoring, and Remote-Control

All of the functionality of the legacy series (M110 and M800) with an onboard interactive display and enhanced electronics

MyDro 150 and 850 RTUs

Easy to Install

Each remote terminal unit (RTU) includes all necessary hardware for a standard installation, such as a cellular radio, enclosure, backup battery, transformer, antenna with cable, and mounting hardware. Purpose-built RTUs simplify and speed installation. There is no programming required, and RTUs are self-enrolling.

Reliable Wireless Communications

RTUs operate on current generation cellular radios for dependable data transmissions. Mission maintains direct relationships with the largest cellular carriers in the U.S. and Canada to ensure the best service possible. There are no radios to license or cellular contracts to set up.

Real-Time Alarms Delivered To All Devices

Real-time alarms are delivered via phone call, text message, email, fax, page, and even to an existing HMI software through an OPC data link. Each alarm is logged with a time stamp for tracking and reporting. The alarm call-out schedule is easy, flexible, and intuitive to set up.

Managed Service–The Complete Package

The Mission system includes all cellular data service, data storage, alarm call-outs, reports, and on-call, 24-7-365 technical support. The highly reliable turnkey system offers more features at a lower cost than an in-house setup. No engineering or programming is required, and there are no networks to maintain.

View data and reports using the secure 123SCADA web portal, accessible from any web-enabled device. The 123SCADA user interface is designed to mimic industry-standard HMI SCADA and also includes a legacy user mode. Tabular and graphical reports can be used for compliance reporting and comparative studies. System enhancements are available immediately and included at no cost.

M150 RTUs

Real-Time Alarms with Hourly Summaries

M150 RTUs summarize pump runtimes and pump starts hourly. All alarm data is reported in real-time. Analog data and RTU status are reported hourly. Simultaneous pump runtimes can be reported when two pumps run.

M850 RTUs

Real-Time Alarms and Streaming Data

M850 RTUs report pump starts and stops in real-time. Analog values are reported every two minutes or on a five percent change. Volumetric flow calculations can utilize this information along with sump volume (as determined by an analog level sensor or fixed entries) to calculate hourly volumetric flow rates.

Remote-Control

Expand system operations with optional remote-control for off-site wells, tanks, gates, chlorine dosers, variable frequency drives, and more. Optional automatic remote control interfaces include the Tank and Well Control Package, Digital Interconnect, and Analog Interconnect.

LCD Touch Screen

- Displays current status
- Supports local configuration

Radio

- Cellular radios support LTE, 4G, 3G, and 2G for both GSM (AT&T and partners) and CDMA (Verizon and partners)
- No radio licenses or site path studies required

Expandable

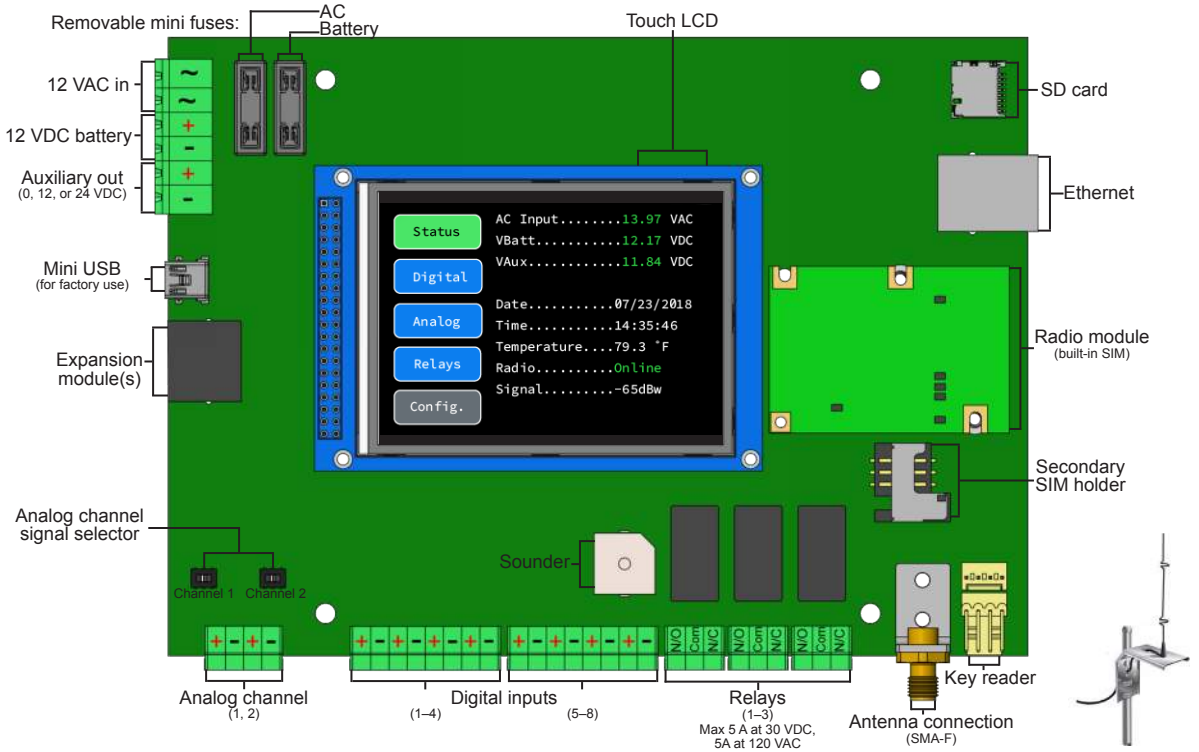
- Up to 16 digital inputs, 6 analog inputs, 2 pulse inputs, and 2 analog outputs, simultaneously
- Onboard digital inputs configurable for wire fault supervision or strap on current sensing switch for easier pump run indication
- RS485 for digital, analog, and pulse expansion

Enhanced

- 12 or 24 VDC auxiliary output for battery-backed analog instrument loop power
- Over-the-air upgradeable firmware

	MyDro 150	MyDro 850
Wastewater	Sewage lift station, industrial water quality (WQ) alarming, lift station generator alarming	Master pump station monitoring and remote-control, critical process monitoring, open channel flow monitoring, sewer station power monitoring, reuse water monitoring and control
Water	Pump station alarming, reservoir level alarming, remote valve alarming, chlorine (Cl) residual WQ alarming, pressure reducing valve station alarming	Pump station monitoring, tank and multiple well control, remote valve monitoring and control, Cl residual WQ alarming, flow or pressure monitoring
Other	Gate status alarming, rainfall monitoring	Septic offload and billing, custody transfer and billing, canal level monitoring and gate control, I&I flow, level data logging

Technical Specifications



Outdoor NEMA 4X enclosure:
13.25" w x 13.75" h x 6.25" d
With sun shield
Weight: 7.6 lbs

NEMA 1 enclosure:
11.375" w x 11.25" h x 3.5" d
Use indoors, wall mounting
Weight: 3.6 lbs

FlatPak NEMA 1 enclosure:
10.5" w x 7.75" h x 1.5" d
Use inside MCC cabinet
Weight: 1.8 lbs

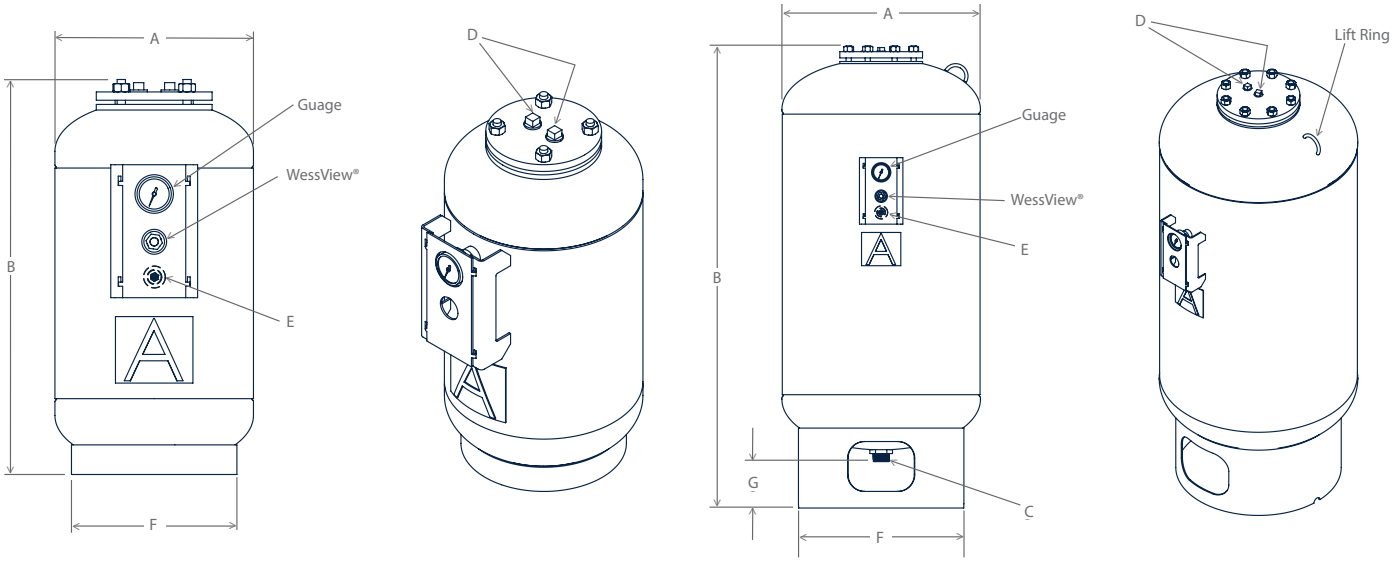
5 Ah battery weighs additional
3.6 lbs

		MyDro 150	MyDro 850
Data	**Alarm Data**	Real-time	Real-time
	Pump State	Summarized hourly	Real-time
	Analog Reporting	Current value reported hourly	Every 2 minutes or on 5% change
	Device Health	Built-in inputs reported hourly	
Input/Output	**Digital Inputs**	8 onboard, dry digital inputs with selectable wire fault supervision or direct attach current sensing switch; Expandable to 16 with PN OP653	
		3 configurable for pump run summary reporting; Simultaneous runtimes reported when 2 pumps are monitored	8 configurable for pump run; Pump states reported in real-time. Simultaneous pump runtime reporting supported for up to 7 pumps
	Analog Inputs	2 onboard, 4–20 mA isolated or 0–5 VDC; 4 alarm set points each; Expandable to 6 with PN OP465	
	Relay Outputs	3 remotely controllable, form C, dry contact relay outputs; 5 A at 30VDC, 120 VAC, SPDT, N/O, or N/C	
	RS485	Support for specified expansion modules	
	Pulse Inputs	2 channels with pulse input expansion module (PN OP464)	
		15-minute reporting	2-minute reporting
	Analog Output	2 channels (4–20 mA or 0–5 V) with PN OP461	
	Electronic Key Reader	Key reader for site activity tracking and service mode	
	Built-in Inputs	AC voltage, battery voltage, board temp, and signal strength; Optional second key reader	
Electrical	**AC Power**	Supervised 120 VAC to 12 VAC, 1.2 A, UL-recognized class II/class III transformer	
	Backup Power	12 V, 5 Ah battery standard with enhanced charging system	
		Up to 50 hours	Up to 18 hours
	Auxiliary	Auxiliary output selectable 12 VDC or 24 VDC for battery-backed analog instrument loop powering; 250 mA max	
	Removable Terminals	Included: Amphenol PN 20020008-G061B01LF (6 pin for power), 20020004-D081B01LF (D08, D04, D03 for I/O)	
	Power Consumption	4.2 W	
Other	**Enclosures**	FlatPak (PN M153), NEMA 1 (PN M151), NEMA 4X (PN M152), Large NEMA 4X (PN M152L)	FlatPak (PN M853), NEMA 1 (PN M851), NEMA 4X (PN M852), Large NEMA 4X (PN M852L)
	Environment	Operating temperature -20–60°C, non-condensing	
	Cellular Radio	Radios make live, continuous, encrypted TCP socket connections; Payload is end-to-end acknowledged; Penta band (850, 900, 1700, 1900, 2100 mHz); AT&T and partners: LTE, HSPA+, 3G; Verizon and partners: LTE, EVDO, 1XRTT	
	Antenna	Omnidirectional antenna with 11' cable, SMA termination, universal mounting bracket	
	Options	Optional SCADA integration OPC link (PN SW586) to client/server HMI, Tank and Well Control Package (see Accessory Catalog for details)	
	Service	Requires Service Packages for the unit and optional expansion boards (see Accessory Catalog for details)	
	Warranty	One-year manufacturing and material warranty	

Safety Certified

MISSION COMMUNICATIONS
(877) 993-1911 • sales@123mc.com • 123mc.com

FXA



FXA-85 thru FXA-800L

MODEL	DIMENSIONS (in.)							MAX WORKING PRESSURE	SHIPPING WEIGHT (lbs)
	A	B	SYSTEM CONNECTION		CHARGING VALVE	F	G		
			C	D	E				
FXA-35	12	23 1/2	-	3/4 NPT	0.302" - 32NC	10	-	125	40
FXA-50	14	24	-	3/4 NPT	0.302" - 32NC	10	-	125	50
FXA-85	16	37	1 NPT	3/4 NPT	0.302" - 32NC	12	5 1/2	125	90
FXA-130	20	37	1 NPT	3/4 NPT	0.302" - 32NC	16	5 1/2	125	125
FXA-200	24	43	1 1/2 NPT	3/4 NPT	0.302" - 32NC	20	5 1/4	125	210
FXA-300	24	55	1 1/2 NPT	3/4 NPT	0.302" - 32NC	20	5 1/4	125	225
FXA-400	30	49	1 1/2 NPT	3/4 NPT	0.302" - 32NC	24	5 1/4	125	300
FXA-500	30	57	2 NPT	3/4 NPT	0.302" - 32NC	24	5 1/4	125	335
FXA-600	30	65	2 NPT	3/4 NPT	0.302" - 32NC	24	5 1/4	125	360
FXA-800L	32	76	2 NPT	3/4 NPT	0.302" - 32NC	28	5 1/4	125	475

Note:

- Tanks are factory pre-charged at 40 psi and field adjustable.
- California code-sight glass is available upon request.
- Both top and bottom connections (C and D) access the bladder.
- Available with mounting clips.

TYPICAL SPECIFICATION

Furnish and install, as shown on plans, a _____ gallon _____" diameter X _____" (high) pre-charged steel hydropneumatic pressure tank with heavy-duty butyl bladder. The tank shall have multiple water-side connections to promote full-flow to eliminate stagnate water within the tank, a 0.302"-32 charging valve connection (standard tire valve) to facilitate the on-site charging of the tank to meet system requirements, a pressure gauge, and WessView® bladder integrity monitor. The tank must contain a port for WessGuard® proximity sensor monitor. The tank must be constructed in accordance with most recent addendum of Section VIII Division 1 of the ASME Boiler and Pressure Vessel Code, and rated for 125 psig.

Each tank shall be Wessels model number FXA-_____ or approved equal.

UPGRADE TO SMART WESSGUARD® TANK PROTECTION

Wessels Type FXA-WG Smart Tanks are ASME removable bladder type pre-charged, hydropneumatic expansion tanks, with patented WessGuard® bladder monitor. They are designed to absorb the expansion forces and control the pressure in heating/cooling systems and come equipped with a uniquely designed capacitive sensor that is sensitive to any movement inside the tank.

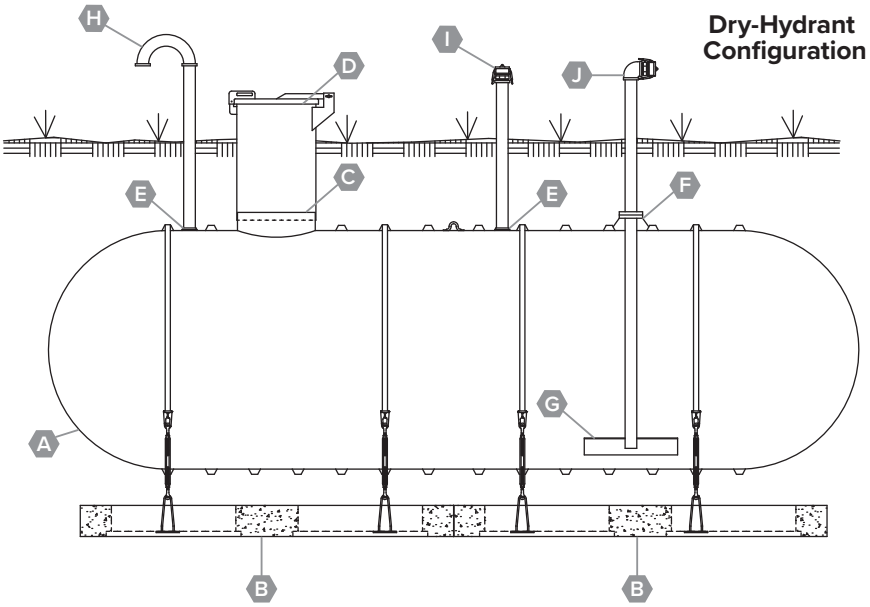
The system's expanded water (fully compatible with water/glycol mixtures) is contained in a heavy-duty bladder preventing tank corrosion and waterlogging problems. If the bladder extends beyond the normal movement, WessGuard® monitor will activate an audible LED alarm and energy management system to notify maintenance staff of a potential system issue.

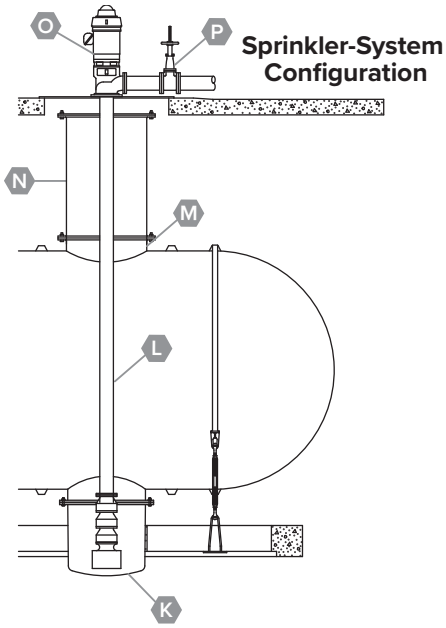
SINCE 1908 wessels company
101 Tank Street Greenwood, IN 46143
P: 317-888-9800 F: 317-865-7411
www.westank.com

FIRE PROTECTION TANKS

Our tanks can be used to store either primary or secondary water supplies for fire protection. Municipalities and developers often install fire protection water tanks when developments are far from municipal water supplies. The tanks are also an ideal solution for sites that don't have sufficient water volume or pressure for fire protection needs.

The tanks can provide water for a building's sprinkler system or give fire trucks quick, easy access to water for dry-hydrant connections. Our fire protection tanks comply with NFPA 20, 22 and 1142 standards. When used as dual-purpose water tanks that store potable water, they are available as NSF 61-listed (and labeled) tanks.





CODE	DESCRIPTION
A	Xerxes Single-Wall FRP Tank
B	Xerxes Prefabricated Deadman System with Anchor Strap and Turnbuckle Assembly
C	30" I.D. Access Opening w/Alignment Ring
D	30" FRP Riser Pipe with Hinged and Lockable Top and Gel Coat

E	4" NPT Service Fitting
F	4" FRP Flanged and Gusseted Down Pipe
G	FRP Anti-vortex Plate
H	4" Vent Pipe with Bird Screen
I	4" Fill with Cam Lock Connection
J	4" Suction with Fire Department Connection
K	30" FRP Flanged Bottom Sump

L	6" Vertical Pump Shaft Housing with Bowl Assembly and Strainer
M	30" Manway with Blank Cover
N	30" Manway Extension
O	Vertical Pump with Discharge Head and Mounting Plate
P	Discharge Valve and Piping

Case Study: Supplemental Water

As Stantec developed the design for a Toronto college's new aerospace center, they realized that the available fire protection water flow from the onsite system did not meet the city's requirement for water supply. Three Xerxes 35,000-gallon [132,000-liter] tanks now provide the supplemental water. This installation took less than four hours from offloading to burying the tanks.

APPENDIX C

TOWN OF CRESTED BUTTE

PUBLIC WORKS CRITERIA

FOR DESIGN AND CONSTRUCTION

June 2018

APPROVED FOR PUBLIC RELEASE; DISTRIBUTION UNLIMITED

FOREWORD

This is a living document that will be periodically reviewed, updated, and made available to users as part of the Town of Crested Butte, Colorado responsibility for providing technical criteria for design and construction projects in Crested Butte. Contractors should contact the Public Works Department for document interpretation and improvements.

Deviation from these criteria cannot be made without prior written approval of the Public Works Director.

This document is effective upon issuance, and can be found on the Town of Crested Butte Internet site, www.crestedbutte-co.gov

Authorized By:

Dara MacDonald
Town Manager
Town of Crested Butte

Rodney E. Due
Director of Public Works
Town of Crested Butte

Original issuance dated March 2009

Updated as of June 12, 2018

TOWN OF CRESTED BUTTE

PUBLIC WORKS CRITERIA

FOR DESIGN AND CONSTRUCTION

TABLE OF CONTENTS

Section 300 (continued)

Section 400

TOWN OF CRESTED BUTTE

GENERAL SPECIFICATIONS

SECTION 100

I. SCOPE

These specifications including material specifications and construction requirements for all construction within Town right-of-way and in other areas under Town jurisdiction or ownership.

These specifications are the minimum requirements for design, materials, and construction and may only be modified by written approval from the Town OF Crested Butte.

II. DEFINITIONS AND ABBREVIATIONS

Wherever the following words, phrases or abbreviations appear in these specifications, they shall have the following meanings:

Town: The Town of Crested Butte, Colorado.

Town Code: The official adopted Town Code Regulations of Crested Butte, Colorado.

Engineer: The Town Engineer, Town OF Crested Butte, Colorado, or an authorized representative acting on behalf of the Town.

Traffic Control Officer: An authorized representative acting on behalf of the Town OF Crested Butte, Colorado.

Inspector: An authorized representative of the Town at the site of the work.

Utility: The Water and Sewer Utilities Department of the Town OF Crested Butte, Colorado and all other utilities.

Base Course: The upper course of the granular base of the pavement or the lower course of an asphalt concrete pavement structure.

Culvert: Any structure not classified as a bridge, which provides an opening under or adjacent to the roadway.

Pavement: Any surfacing of streets, alleys, sidewalks, courts, driveways, or similar areas, consisting of material aggregate bound into a rigid or semi-rigid mass

by a suitable binder such as, but not limited to, Portland cement, or asphalt cement.

Pavement Structure: The combination of subbase, base course, and surface course placed on a subgrade to support the traffic load and distribute to the road bed.

Private Street: Any vehicular access serving residential properties where average daily traffic volume exceeds sixty (60) trips per day.

Public Improvements: Includes public facilities and shall refer to the construction or installation of streets, including curb and gutter, sidewalks, development or extension of the municipal water system, municipal sanitary sewer system, municipal storm sewer system, municipal irrigation system, and landscaping.

Right-of-Way: A general term denoting land, property or interest therein, usually in a strip, acquired for or devoted to a street, highway, or other public improvement.

Road: A general term denoting an open way for purposes of vehicular and pedestrian travel.

Roadway: The improved portion of the right-of-way intended primarily for vehicular traffic.

Sanitary Sewer: Conduits and related appurtenances employed to collect and carry off wastewater to a suitable point of final discharge.

Shoulder: That portion of the roadway contiguous with the traveled way for accommodation of stopped vehicles, for emergency use, and for lateral support of base and surface courses.

Sidewalk: That portion of the street primarily constructed for the use of pedestrians.

Storm Sewer: Any conduit and appurtenance intended for the reception and transfer of stormwater.

Street: The improved area of the right-of-way.

Structures: Bridges, culverts, catch basins, drop inlets, retaining walls, cribbing, manholes, end walls, buildings, sewers, service pipes, underdrains, foundation drains, fences, swimming pools, and other features which any be encountered in the work and not otherwise classed herein.

Subbase: The lower course of the base of a roadway, immediately above the subgrade.

Subgrade: The supporting structures on which the pavement and its special under courses rest.

Whenever the words, "as directed", "as required", "as permitted", or words of like meaning are used, it shall be understood that the direction, requirements, or permission of the Engineer or Town Representative is intended. Similarly, the words "approved", "acceptable", and "satisfactory" shall refer to approval by the Engineer or Town Representative.

Whenever references are made to standard specifications, methods of testing, materials, codes, practices, and requirements, it shall be understood that the latest revision of said references shall govern unless a specific revision is stated. Wherever any of the following abbreviations appear, they shall have the following meaning:

AASHTO: American Association of State Highway Transportation Officials

ASA: American Standards Association

ASTM: American Society for Testing and Materials

AWWA: American Water Works Association

APWA: American Public Works Association

CDOT: Colorado Department of Transportation

CDOT-SSCRB: CDOT Standard Specifications for Construction of Roads & Bridges

DPW: Department of Public Works, Crested Butte

GCEA: Gunnison County Electric Association

MUTCD: Manual of Uniform Traffic Control Devices

III. DESIGN CRITERIA

A. Streets

1. Street Layout

   a. Street layout shall be designed to conform to the standards described in Residential Streets, second edition, published by the American Society of Civil Engineers, National Association of Home Builders and the Urban Land Institute in 1990, or latest edition. Copies are available in the Planning Department. When there are Conflicts between the standards set forth herein and Residential Streets, the standards set forth herein shall prevail.

   b. Street layout shall conform to the Master Street Plan in the Crested Butte Land Use Plan.

B. Dry Wells

1. Specifically designed for the flow required.

2. Native soil must consist of sandy gravel having a permeability in the range of 0.01 feet per minute

3. Seasonal high groundwater level must be at least 24-inches below the ground surface

4. Refer to dry well diameter schedule for allowable volumes pumped per hour

5. Dry well shall be cylindrical in shape and constructed with CMP, concrete pipe, plastic pipe, or precast manhole (with open bottom)

6. Dry well must be at least 4 feet into the ground with the top even with or up to 2-inches above the ground surface and graded so that the surface water does not flow into the dry well

7. The inlet to the dry well should be set at a depth of at least 12-inches above the seasonal high groundwater level but not shallower than 12 inches below the ground surface

8. Dry Well Diameter Schedule:

Dry Well Diameter Schedule	
Total Sump Volume or Max. Volume Pumped During 1 Hour Period (Gallons)	*Dry Well Pipe Diameter*
15	24"
20	30"
30	36"
40	48"

C. Stormwater Permit and Plan

1. For construction disturbing an area of one acre or more, a stormwater permit and plan must be obtained as required by the State of Colorado.

D. Sanitary Sewer System

1. General

   a. All new construction of sanitary sewer mains, man holes, and lift stations must be designed by a Professional Engineer licensed in the State of Colorado and shall meet all Colorado state design and construction regulations.

   b. Professional Engineer is responsible for all state compliance and associated fees with regards to new construction and/or repair and replacement of existing infrastructure. This includes, but is not limited to, site applications and/or amendments to existing site applications.

   c. The Professional Engineer must provide the following information,

      (a) Calculations relevant to the design flows at initial build and final build out. Including, but not limited to, peaking factors, per capita daily flows, commercial capacity allowances and inflow and infiltration allowances.

      (b) Data that demonstrates the new construction design life.

   d. Construction Drawings shall include pertinent project-specific notes to clarify or bring attention to construction requirements that effect the Town's sanitary sewer systems and those who work on these systems.

e. The following shall be provided to the Town for review and approval as applicable and/or for record purposes.

(a) One hard copy and one electronic copy of shop drawings

(b) One hard copy and one electronic copy of complete "as built" drawings, upon completion of the construction work.

(i) Sanitary sewer service "as-builts" shall include measurements of the distance between the new service tap and the upstream and downstream manholes, route of sewer service, location of clean outs, etc.

2. Lift Stations

a. Design calculations, signed by a Professional Engineer, must be submitted to the Town for review and shall contain the following computations: capacity at peak flow, system head, cycle time, buoyancy calculations, and storage volumes.

b. Lift Stations shall be sized based upon the anticipated upstream flow that will be realized in a 20 year period of development. The amount of development in a basin is judgmental and will be determined by the Town.

c. O&M Manual

(a) One hard copy and one electronic copy of the O & M manual. O & M manual must include,

(i) Detailed preventative maintenance schedules and procedures

(ii) Generator information if applicable

(iii) Electrical wiring diagram which depicts all breakers, relays, controls, switches, alarm system, etc.

3. Gravity Sanitary Sewer Mains

   a. The design shall include a manhole at any sanitary sewer main change in direction or grade or at a maximum of 500 feet from adjacent manholes.

4. Sanitary Sewer Service Laterals

   a. Single family and multi-family dwellings, containing 2 to 4 units, will generally require a sewer service for each dwelling. This will be considered by the Town on a case by case basis.

IV. RESPONSIBILITY OF THE TOWN

A. Authority of the Engineer or Town Representative

1. The Engineer/Town Representative shall have the authority on behalf of the Town to ascertain that all design and construction of facilities is equal to or better than the minimum requirements set forth in these specifications.

2. The Engineer/Town Representative shall have the additional authority to assign an inspector to check any and all work, including materials to be incorporated in the work, excavation, bedding, backfill, and all construction methods and practices.

B. Authority of the Inspector

1. Inspectors are assigned to assist the Contractor in complying with these specifications. They have the authority to reject defective materials, or inferior materials and defective workmanship until such time as the Contractor shall correct the situation in question, subject to final decision by the Engineer.

V. RESPONSIBILITY OF THE CONTRACTOR

A. Notice Before Beginning Work

1. The Contractor shall notify the Town Engineer/Town Representative at least five (5) working days before beginning any construction.

2. If for any reason work should stop on a project during any stage of construction for a period of more than twenty-four (24) hours, it is the responsibility of the Contractor to notify the Town Engineer/Town Representative at least twenty-four (24) hours prior to any resumption of work on the project.

3. If the Contractor intends to work extended shifts, double shifts, or hours other than the normal workday of Town personnel, he shall notify the Town Engineer/Town Representative at least twenty-four (24) hours prior to such extension, except in the event of an emergency. Failure to provide notification may provide sufficient cause for suspension of the project.

B. Traffic Control

1. The Contractor shall be required to provide adequate construction signing, flagmen, barricades, etc., to warn vehicular and pedestrian traffic of work in progress and divert traffic as may be required during the course of construction.

2. All signing shall conform to the Manual of Uniform Traffic Control Devices (MUTCD) and shall be subject to the approval of the Town Representative.

3. When specifically authorized by the Town Representative, portions of the streets shall be allowed to be closed to traffic for construction. However, the Contractor shall make every attempt to keep the time of closure of such streets to a minimum.

4. It shall be the responsibility of the Contractor to notify the Fire Department, Marshal's Office and Ambulance Service twenty-four (24) hours prior to the closure of any street.

5. For all work within State of Colorado highway rights-of-way the Contractor shall submit a traffic control plan to the CDOT Traffic Engineer for review.

C. Rejected Materials

1. All materials installed shall be free of manufacturer defects. Any defective or damaged materials found in the construction or on the construction site shall be marked and removed from the site. In the event the Contractor fails to remove rejected materials from the construction site within a reasonable length of time, the Engineer/Town Representative may arrange for such removal at the expense of the Contractor.

D. Familiarity of Specification

1. It shall be the responsibility of the contractor to read and fully comply with all the provisions of these specifications and all laws and regulations that apply to local and state agencies.

E. Maintenance of Site

1. The cleanup and restoration of grounds shall be a continuous process from the beginning of construction to final completion of the work. The Contractor shall keep the work site free from the accumulation of debris and waste material caused by the work.

2. Immediately after the construction activity or major portion thereof is complete, the area shall be cleaned and restored to the original grade and condition. All fences shall be replaced to the same elevation and alignment and restored to a condition equal to or better than that at the beginning of construction.

F. Public Relations and Notifications

1. The Contractor shall carry on the work in such manner as to cause as little inconvenience as possible to the public, particularly to occupants of property along the project, as is consistent with good workmanship. He shall notify occupants at least twenty-four (24) hours in advance of proposed work that may block entrances or otherwise cause undue difficulty to occupants of property affected and shall restore such entrances to usable condition as soon as possible. The Contractor, Subcontractors and employees shall at all times be courteous to the public while engaged upon this work.

2. The Contractor shall notify all business managers and residents affected by the interruption of utilities and other services caused by the work. Such notice shall be given at least twenty-four (24) hours prior to the interruption of service. Notice shall be given for the interruption of domestic water, irrigation water, sewer, trash pickup, mail delivery, and changes in access to property.

3. Notifications may be verbal or in written form if the business manager or resident cannot be located. The Contractor is responsible for posting notice cards for interruption of domestic water service only.

4. Where trees, hedges, shrubs, or other ornamental plantings or structures within the construction limits are not designated to be protected or saved, the Contractor shall notify the owner of the property fronting the plantings or structures in question, not less than ten (10) calendar days prior to their removal.

    a. The Contractor shall bid the project based on assuming responsibility for all removals.

b. This notification shall include allowing the property owner an option to transplant the plantings or relocate structures fronting his property onto his property instead of having the Contractor remove them.

c. This notification requirement is intended as a positive public relations action.

5. All notifications described and required in this section are considered as incidental to the Work and will not be measured or paid for separately.

G. Utilities: Service, Locating, Protecting, and Relocating

1. For all construction projects where Town utilities are made available for the Contractor's use, the Town may require the Contractor to pay for Town utility service used (potable water, sewer, etc.).

2. The Contractor is responsible for calling in all underground utility locates prior to construction.

3. It is the responsibility of the Contractor to provide for the protection of all structures and utilities including pipes, fences, or similar items.

4. In the event of a break in an existing water main, gas main, sewer or underground cable, the Contractor shall immediately notify the responsible official of the organization operating the utility interrupted and shall lend all possible assistance in restoring services.

5. The Contractor shall be responsible for damage to any Town utility system resulting from construction operations. Any repair performed by the Contractor shall be inspected by the Town prior to backfilling.

6. The Contractor shall bear the entire expense of repairing or replacing any utilities or structures disturbed or damaged during construction.

7. Unless otherwise specified in the Contract Documents, all utility relocations will be the responsibility of the utility companies; the Contractor shall be responsible for coordinating the relocation work with the Utility Companies and shall bear any reasonable and customary cost associated with the work.

H. Safety and Protection

1. The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with

the work. He shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

a. All employees on the Work and other persons who may be affected thereby;

b. All work and all materials or equipment to be incorporated therein in storage on or off site;

c. Other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavement, roadways, structures, and utilities not designated for removal, relocation or replacement in the course of construction.

2. The Contractor shall comply with all applicable laws, ordinances, rules, regulations, and orders of any public body having jurisdiction for the safety of persons or property or to protect them from damage, injury, or loss.

3. The Contractor shall erect and maintain, as required by the conditions and progress of the work, all necessary safeguards for safety and protection.

I. Cost of Testing

1. The contractor shall bear all costs of testing unless otherwise specified or agreed to in writing by the Town.

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TOWN OF CRESTED BUTTE

GENERAL EARTHWORK SPECIFICATIONS

SECTION 200

I. SCOPE

The purpose of this General Earthwork Specification is to set forth the criteria to be used for all construction within the rights-of-way and in any other areas of jurisdiction or ownership of the Town of Crested Butte. Work shall include, but not be limited to, surface removals, excavation, dewatering, trench embankment, bedding, and backfill for all utilities, structures, and roads.

II. MATERIALS

A. Fill Material

1. On-Site: All on-site material suitable for structural backfill shall be soil or soil-rock mixture which is free from frozen material, organic matter, and other deleterious substances. It shall contain no rocks over eight (8) inches in greatest dimension. It shall have less than twenty percent (20%) by weight passing the No. 200 sieve and a liquid limit not greater than 35.

2. Pit Run (imported): Shall be well-graded eight (8) inch minus material. It shall have less than twenty percent (20%) by weight passing the No. 200 sieve and a liquid limit not greater than 35.

3. Other Materials: Other materials may be selected by the Contractor subject to the approval of the Engineer/Town Representative.

4. Granular Bedding Material: Granular bedding material shall be a well-graded, gravelly material meeting the requirements of *ASTM D448*, as follows:

Sieve Size	Total Passing (Max % By Weight)
1/2 "	100 %
3/8 "	80 %
No. 4	10 %
No. 200	5 %

5. Subbase, Course Aggregate: CDOT Class 2 Aggregate Base Course.

6. Base, Course Aggregate: CDOT Class 6 Aggregate Base Course.

7. Select Backfill Material may be either CDOT Class 6 Aggregate Base Course or Granular Bedding Material.

8. Sand Specifications: Refer to GCEA requirements for conduit installation.

9. Flow-Fill: Per CDOT standards, most recent edition.

B. Concrete – Sidewalks

1. SP-5 Section 601.02 – Classification (Concrete):

   a. Mix design for concrete shall conform to Concrete Class D as specified in Table 601-1

   b. The Town reserves the right to modify the concrete mix design after review of the final mix design submitted by the Contractor if an acceptable alternate mix can meet the following general concrete mix design criteria:

      (a) Compressive Strength: 4,000 psi minimum at 28 days

         (i) Minimum No. of Passing Cylinders: 90%

         (ii) Minimum Acceptable Cylinder Strength: 3,800 psi

      (b) Cement Content: minimum six (6) bags per cubic yard

      (c) Maximum permissible water-cement ratio for 4,000 psi strength, air entrained, absolute ratio by weight 0.45

      (d) Slump: maximum four (4) inch

      (e) Air Content: 6% +/- 1% for all concrete

C. Embankments

1. All fill material shall be free from roots, organic material, trash, and frozen material.

2. Rocks, broken concrete, or other solid materials more than six (6) inches in greatest dimension shall not be placed in embankment areas less than one (1) foot deep as measured from the subgrade.

3. Materials up to one hundred fifty (150) pounds in weight may be placed at the base of fills over three (3) feet deep as measured from the subgrade.

III. INSTALLATION

A. Removal of Water

1. When required by the Town, a construction dewatering permit, as required by the State of Colorado, shall be obtained by the Contractor.

2. Dewatering of ground water on excavation

   a. Water shall be disposed of in a suitable manner without damage to adjacent property and without being a menace to public health and convenience.

   b. Shall be done in a manner so as not to allow pollutants or silt to collect on Town rights-of-way, stream courses, or storm sewers.

3. Dewatering onto the Town rights-of-way or storm sewers must be pre-approved.

4. Trenches shall be kept free of water during pipe laying operations by draining, pumping, or other approved methods.

   a. The water level shall be maintained below the trench bottom throughout the placement of bedding, pipe laying, joining, and backfilling operations.

   b. The dewatering shall be carried out so that it does not destroy or weaken the strength of the soil under or alongside the trench.

   c. Under no circumstances shall trench water be discharged into sanitary sewers.

   d. Construction dewatering into the Town's sanitary sewer system is not permitted. Discharge of hydro-test water, dechlorinated water from pipe line disinfection or flush water from storm drain cleaning is not permitted into the Town's wastewater collection system.

5. The method of disposal of trench water shall be approved by the Engineer/Town Representative.

B. Clearing, Grubbing, and Stripping

1. Clearing

   a. Excavation and grading for street improvements and paving projects shall include removal of trash, rubbish, and low-lying vegetation in the construction area. All vegetation and objects designated to remain shall be protected from injury or defacement.

2. Grubbing

   a. All vegetation such as trees, stumps, hedges, shrubs, brush, heavy sod, heavy growth of grass, decayed vegetable matter, rubbish, and other unsuitable material within the area of excavation or upon which embankment is to be placed shall be stripped or otherwise removed to a minimum depth of three (3) inches.

      (a) All such materials shall be wasted or spread outside the construction area or disposed of as directed by the Engineer/Town Representative.

      (b) In no case shall such objectionable material be allowed in or under embankment. Except in areas to be excavated, stump holes, and other holes from which obstructions are removed, shall be backfilled with suitable material and compacted in accordance with these specifications.

3. Stripping

   a. Stripping shall consist of removing unsuitable overburden material before removal of other materials for use in the roadway. All areas to be graded and all embankments or fill areas under paved slabs shall be stripped.

4. Noxious Weed Management

   a. Contractors shall conform to the standards described by the *Town of Crested Butte Noxious Weed Management Plan*, as required by the *Colorado Noxious Weed Act of 2008*.

C. Excavation

1. After all clearing, grubbing, and stripping has been completed, excavation of every description and of whatever materials encountered within the grading limits of the project shall be performed. All suitable excavated materials shall be transported to and placed in embankments or fills within the limits of the work.

2. Variation from the subgrade plane shall not be more than one (1) inch of soil.

3. Excavation operations shall be conducted so that material outside of the limits of slopes will not be disturbed, but all cuts shall be made to subgrade a minimum of one (1) foot outside the proposed edge of paving slab or curb.

4. The Contractor shall not excavate beyond the dimensions and elevations established and material shall not be removed prior to the staking.

5. If excavation to the finished graded section encounters a subgrade or slopes of spongy material, vegetable matter, or trash pockets, the Engineer/Town Representative may require the Contractor to remove the unsuitable materials and backfill to the finished graded section with suitable material.

    a. The Engineer/Town Representative may designate as unsuitable those soils or materials that are in his judgement detrimental to the finished roadway. All unsuitable materials shall be disposed of outside the construction area.

6. Where the excavation is carried beyond or below the lines and grades staked or shown on the plans, the Contractor shall, at his own expense, refill and compact all such excavated space with suitable granular material.

D. Roadway Excavation and Grading

1. This work shall consist of excavation, disposal, shaping, or compaction of all material encountered within the limits of the roadway in close conformity with the lines, grades, and typical cross sections shown on the plans or as directed by the Engineer/Town Representative.

2. The excavation and embankments for roadway and ditches shall be finished to reasonably smooth and uniform surfaces.

3. Unauthorized Pavement Removal: Unless authorized by the Engineer/Town Representative, all removed pavement and excavations made beyond the lines and grades shown on the approved Construction Drawings or described in the Construction Specifications shall be replaced at the Contractor's expense.

E. Shouldering and Miscellaneous Work

1. The Contractor shall deposit sufficient suitable earth between curb and sidewalks or property lines so that when smoothed and consolidated in final deposition, it will provide a uniform smooth slope from top of curb to the adjacent sidewalk or property line. In case excavation is necessary to accomplish the above purpose, the Contractor shall make such necessary excavation, and shall leave the area so filled or excavated free from all trash and debris.

2. The Contractor shall set all manholes, water boxes, or other service boxes, to the proper finished grade of the pavement or of the fill back of the curb. This work will be considered as part of the grading.

F. Embankments

1. Embankment construction shall consist of constructing roadway embankments, including preparation of the areas upon which they are to be placed; the construction of dikes; the placing and compacting of approved material within project areas where unsuitable material has been removed; and the placing and compacting of embankment material in holes, pits, and other depressions within the project area. Only approved materials shall be used in the construction of embankments and backfills as specified in *Part II – Materials*, above.

2. Free running water shall be drained from the material before the material is placed.

3. When an embankment is to be placed and compacted on hillsides, when new embankment is to be compacted against existing embankments, or when embankment is built one-half width at a time, the slopes that are steeper than 4:1 when measured longitudinally or at right angles to the roadway shall be continuously benched over those areas where it is required as the work is brought up in layers.

    a. Benching shall be well-keyed and, where practical, a minimum of eight (8) feet wide. Each horizontal cut shall begin at the

intersection of the original ground and the vertical sides of the previous cuts.

b. Material thus cut out shall be recompacted along with the new embankment material at the Contractor's expense.

4. Embankment material shall be placed in horizontal layers not to exceed eight (8) inches in loose depth and compacted prior to placing each following layer.

5. When pipe is to be installed in areas requiring fills or embankments, the embankment or fill shall be completed a minimum of one (1) foot above the top of pipe to be installed, prior to trenching and installation of the pipe.

6. The Contractor shall add moisture to, or dry by aeration, each layer as may be necessary to meet the requirements for compaction.

7. Moisture content range (material dependent)

   a. Not more than 3% above optimum moisture content

   b. Not less than 5% below optimum moisture content

8. Under roadways and extending one (1) foot beyond proposed curb line as measured perpendicular from the centerline, embankments shall be compacted for the entire depth of the fill.

9. Compaction Requirements

   a. Top three (3) feet: Minimum of ninety five percent (95%) maximum density as defined by *ASTM D698 / AASHTO T-99.*

   b. Excluding top three (3) feet: Not less than ninety percent (90%) maximum density

G. Trench Excavation

1. Surface Removal and Topsoil Preservation

   a. The Contractor shall remove surface materials and obstructions only to the widths necessary for excavation of the trench. All fences, landscaping, and structures not designated for removal shall be protected or, if moved, restored to their original condition after construction is complete. Removal of concrete curbs, gutters, sidewalks, and driveways shall be along existing joints or neatly cut lines.

b. Where excavation is required under paved areas, the pavement shall be cut in such a manner as to affect a smooth, straight-cut edge, and as a vertical face, six (6) inches minimum beyond the trench wall.

c. Clean topsoil suitable for final grading shall be stripped, stockpiled separately in approved location, and restored to the surface after the trench is backfilled.

(a) Where excavation is in a lawn-covered area, the sod shall be cut, removed, and replaced after trench filling so as to promote regrowth. Where sod is disturbed, the Contractor shall re-sod with like grass at his own expense.

2. Stockpiling Excavated Material

a. Excavated material shall be piled in locations that will not endanger the work, create traffic hazards, or obstruct sidewalks and driveways.

b. Fire hydrants, valve boxes, manholes, and other utility access points shall be left unobstructed until the work is complete. Gutters and other water courses shall not be obstructed unless other provisions are made for runoff and street drainage.

c. All surplus material and excavated material unsuitable for backfilling shall be removed from the site and disposed of in areas secured by the Contractor.

3. Trenching

a. Trenches shall be excavated to the width necessary to permit the pipe to be laid and jointed properly and backfill materials placed and compacted as required.

b. Where conduit is to be installed outside of existing pavement and pipes have an inside diameter of thirty-three (33) inches or less, the trench shall be excavated at pipe level a minimum of sixteen (16) inches wider than the outside diameter of the pipe so that a clear space of not less than eight (8) inches is provided on each side of the pipe.

c. For pipes having an inside diameter of thirty-six (36) inches or greater, the trench shall be excavated at pipe level a

minimum of twenty-four (24) inches wider than the outside diameter of the pipe so that a clear space of not less than twelve (12) inches is provided on each side of the pipe.

(a) Wherever it is necessary to exceed these limits, approval of the Engineer/Town Representative shall be obtained and provisions made for the additional load imposed on the pipe.

(b) When sheeting is used, the widths indicated above shall be measured to the inside dimension between the sheeting.

4. Bracing and Sheeting of Trenches

a. All trenches shall be properly braced, sheeted, or otherwise supported to provide safe working conditions and protection of the Work, workers, and adjacent property. Bracing and sheeting shall conform to the recommendations in the *Occupational Safety and Health Administration (OSHA) Standards for Construction.*

b. A sand box or trench shield may be used in lieu of sheeting and bracing as permitted by OSHA. All trench support materials shall be removed in a manner that will prevent caving of the sides and movement or other damage to the pipe.

5. Trenches with Sloping Sides

a. In traveled streets, alleys, or narrow easements, only vertical trenches with proper bracing will be allowed.

b. Where working conditions and right-of-way width permit (as determined by the Engineer/Town Representative), trenches may be excavated with sloping sides in accordance with OSHA requirements. Sloping sides will not be allowed when it requires excavation beyond the limits shown on the approved Construction Drawings.

c. Where trenches with sloping sides are permitted, the slopes shall not extend below a point twelve (12) inches above the top of pipe. The trench shall be excavated with the vertical sides below this point with widths not exceeding those specified on *Drawing No. 1 – Standard Trench Detail.*

6. Over-Excavating for Rock

   a. When bedrock, boulders, or loose/stony soil are encountered in the trench bottom so that there is the possibility of pipe being subjected to "point" contacts, the trench shall be over-excavated a minimum of six (6) inches. The over-excavated material shall be replaced with Engineer/Town Representative-approved material and compacted.

   b. If blasting is required for rock excavation, all work with explosives shall conform to Federal and State Laws, and OSHA rules and regulations. Any damage caused by blasting shall be repaired by the Contractor at his expense.

7. Unstable Trench Bottom

   a. Where the excavation is found to consists of organic matter, or any other material that the Engineer/Town Representative determines to be unsuitable for supporting the pipe, the trench shall be excavated to an additional depth as directed by the Engineer/Town Representative and replaced with an approved granular stabilization material.

   b. Suitable materials will be determined by the Town/Town Representative shall determine suitability of materials to be used.

8. Trench Bedding

   a. All trenches shall be excavated to at least four (4) inches below the pipe grade and backfilled to grade with approved granular bedding material.

   b. The bedding material shall be hand-shaped and graded until the trench bottom is uniform and free from rocks, bumps, and depressions.

   c. A coupling or bell hole shall be dug at each pipe joint with sufficient length, width, and depth to permit assembly of the joint and provide a minimum clearance of two (2) inches between the coupling and the trench bottom.

   d. If, in the opinion of the Engineer/Town Representative, the pipe is subjected to unusual loading, Class A – Concrete Arch bedding may be required.

(a) The Contractor shall provide an analysis of the load conditions and the bedding required if directed by the Engineer/Town Representative. Refer to *Drawing No. 3 – Pipe Embedment Detail.*

9. Backfilling Pipes and Structures

a. During initial backfilling, the Contractor shall take all necessary precautions to prevent movement or distortion of the pipe or structure being backfilled.

b. Pipe bedding material shall be placed and compacted in even lifts on both sides of the conduit to six (6) inches above the top of the pipe.

c. Above the bedding material, earth backfill material shall be placed full-width in uniform layers not more than twelve (12) inches thick.

d. Each layer shall be compacted to the required density with approved mechanical or hand tamping equipment.

e. Unless otherwise specified or approved by the Engineer/Town Representative, all backfill material shall be placed with moisture-density control in accordance with *Drawing No. 1 – Standard Trench Detail.*

(a) Moisture content range

(i) Two percent above (+2%) the optimum moisture content

(ii) Four percent below (-4%) the optimum moisture

f. Jetting or water soaking trenches to achieve compaction of the backfill will not be permitted except when:

(a) Soil sample tests show that the backfill and excavated trench materials consist of gravel or other granular material having less than fifteen percent (15%) by weight passing on No. 200 sieve.

(b) The Engineer/Town Representative has given written approval prior to water soaking.

g. Concrete structures shall not be backfilled until the concrete and mortar therein has attained a minimum compressive strength of two-thousand (2,000) psi, and can sufficiently support the loads imposed by the backfill.

h. Select backfills shall be compacted to not less than ninety-five percent (95%) of the maximum dry density determined in accordance with *ASTM D698 / AASHTO T-99.*

10. Compacting Backfill Material

a. Backfill material in trenches shall be compacted to at least ninety percent (90%) of maximum density up to the top three (3) feet of the trench under existing or proposed roads or structures. Maximum density shall be defined by *ASTM D698 / AASHTO T-99.*

b. All approved backfill material shall be moisture-compacted to between two percent above (+2%) and four percent below (-4%) the optimum moisture content prior to its placement in the trench.

11. Backfilling with Flow-Fill

a. Top three (3) feet of trench under existing or proposed roads shall be flowable fill as specified in *Part II – Materials, Item A.9. – Flow-Fill,* above, and *Drawing No. 2 – Flow-Fill Backfill Detail.*

b. All excavations or trenches within the Town's alley right-of-way shall be filled the final six inches with class 6 material.

c. Flow-fill shall be used where trench crosses curbs, streets, or sidewalks.

H. Street Construction

1. Streets shall be constructed by the subdivider to conform to the standards described in *State Department of Highways, State of Colorado, Standard Specifications for Road and Bridge Construction, 2011,* or latest revision. When there are conflicts between the standards set forth herein and *State Department of Highways, Division of Highways, State of Colorado, Standard Specifications for Road and Bridge Construction, 2011,* the Standards set forth herein shall prevail.

I. Sidewalks

1. The Town utilizes Standard Specifications for Roadway and Concrete Construction which are based upon *CDOT Standard Specifications for Road and Bridge Construction, 2011*, or latest revision.

J. Storm Water

1. All pollution control devices and best management practices (BMPs) shall be provided and placed so that all potential pollutants will be contained.

2. All access points must be controlled to minimize the tracking of debris on to Town right of away.

IV. INSPECTION AND TESTING

A. Embankments

1. In-Place Density: One test for every six-thousand (6,000) square feet per lift

B. Trenches

1. For every four-hundred (400) lineal feet of trench and each branch or section of trench less than four-hundred (400) feet in length, at least one compaction test shall be performed for each two (2) foot vertical lift of backfill material placed.

2. The first test shall be taken approximately two (2) feet above the top of pipe, and the last test shall be at the pavement subgrade or six (6) inches below the ground surface in unpaved areas.

3. Compaction tests shall be taken at random locations along the trench and wherever poor compaction is suspected. If any portion of the backfill placed fails to meet the minimum density specified, the area shall be defined by additional tests as necessary and the material in the designated area shall be removed and replaced to the required density at the Contractor's expense.

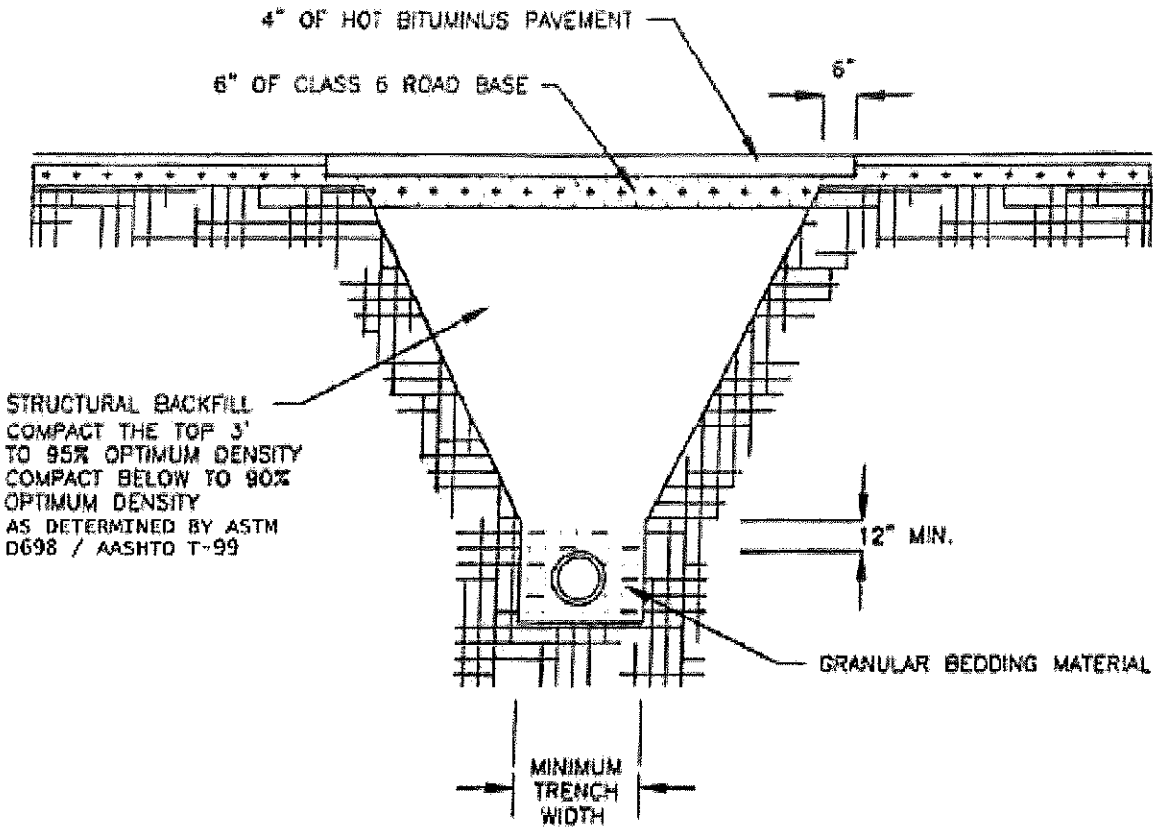
C. Acceptance

1. All compaction testing shall be performed by an independent soil testing laboratory acceptable to the Town.

2. It shall be the Contractor's responsibility to make necessary excavations in order to accommodate compaction tests or retests at all locations designated.

3. A summary report of all compaction tests shall be submitted to the office of the Engineer/Town Representative. The test results are required as a basis of acceptance of facilities by the Town.

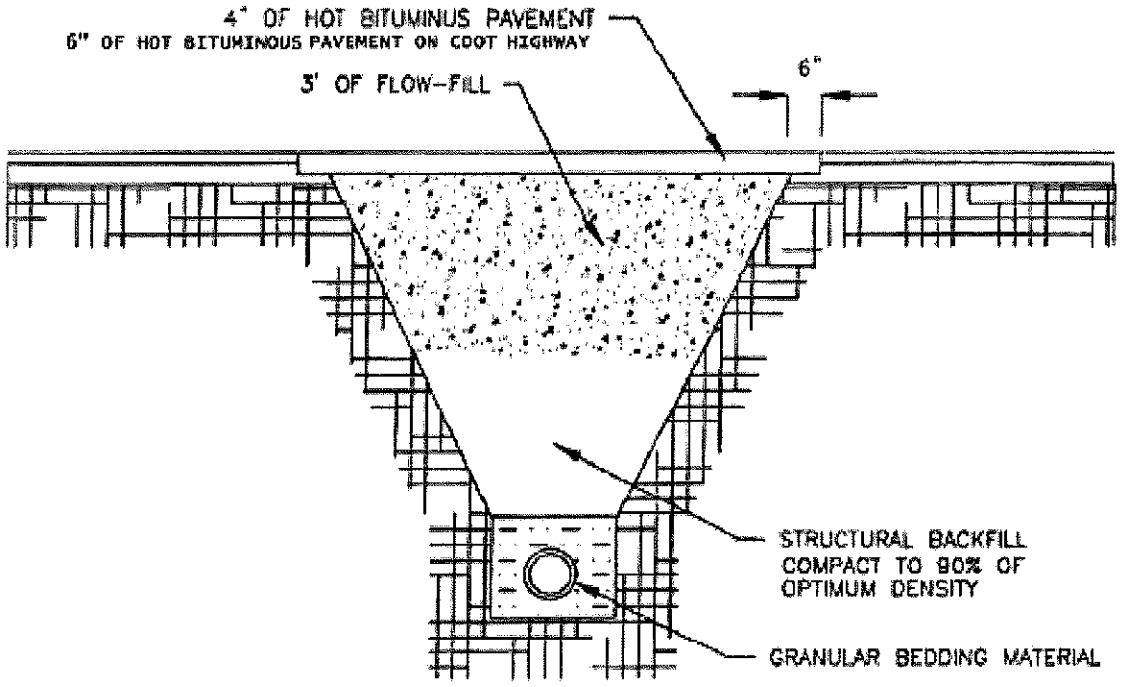
DRAWING NO. 1: STANDARD TRENCH DETAIL



TRENCH WIDTH NOTES:
1. INSIDE DIAMETER PIPE < 33" ALLOW 8" MIN. EACH SIDE OF PIPE
2. INSIDE DIAMETER PIPE > 36" ALLOW 12" MIN. EACH SIDE OF PIPE
3. TRENCH WIDTHS SHALL NOT BE WIDEND BEYOND THESE LIMITS BELOW 12" OVER THE TOP OF THE PIPE.

PAVEMENT PATCHING NOTES:
1. EXISTING PAVEMENT TO BE CUT STRAIGHT 6" FROM THE EDGE OF THE TRENCH
2. IF THE ADJACENT PAVEMENT IS DISTURBED IT SHALL BE RECUT TO A NEAT LINE AND REPLACED.
3. MINIMUM PATCH THICKNESS IS 4" OR MATCHING EXISTING WHICHEVER IS GREATER.
4. MINIMUM PATCH THICKNESS ON CDOT HIGHWAY IS 6"
5. PATCHING SHALL BE COMPLETED WITHIN 48 HOURS OF COMPLETION OF BACKFILL
6. IF HOT BITUMINOUS PAVEMENT IS NOT AVAILABLE COLD PATCH SHALL BE USED. COLD PATCH SHALL BE REPLACED WITH HOT BITUMINOUS PAVEMENT AS SOON AS IT IS AVAILABLE.

DRAWING NO. 2: FLOW-FILL BACKFILL DETAIL



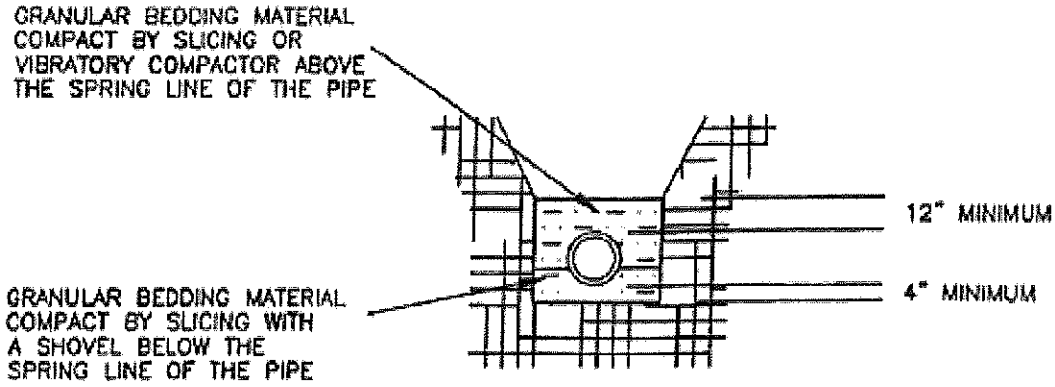
SEE STANDARD TRENCH DRAWING FOR TRENCH WIDTH AND PAVEMENT PATCHING REQUIREMENTS.

EXCEPT:

IF HOT BITUMINOUS PAVEMENT IS NOT AVAILABLE THE TRENCH MAY BE FILLED LEVEL TO THE ADJACENT PAVEMENT WITH FLOW-FILL. THE TOP 4" SHALL BE REPLACED WITH HOT BITUMINOUS PAVEMENT AS SOON AS IT IS AVAILABLE.

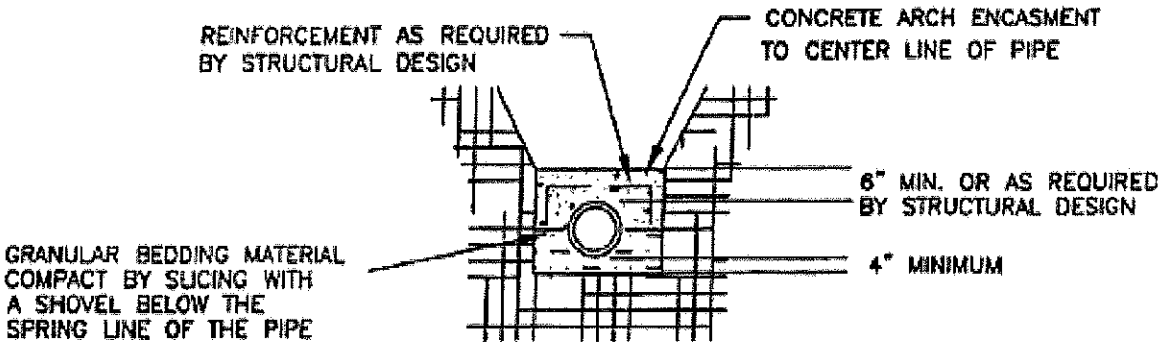
COMPACTION TESTING NOT REQUIRED ON FLOW-FILL.

DRAWING NO. 3: PIPE EMBEDMENT DETAIL



CLASS B EMBEDMENT DRAWING

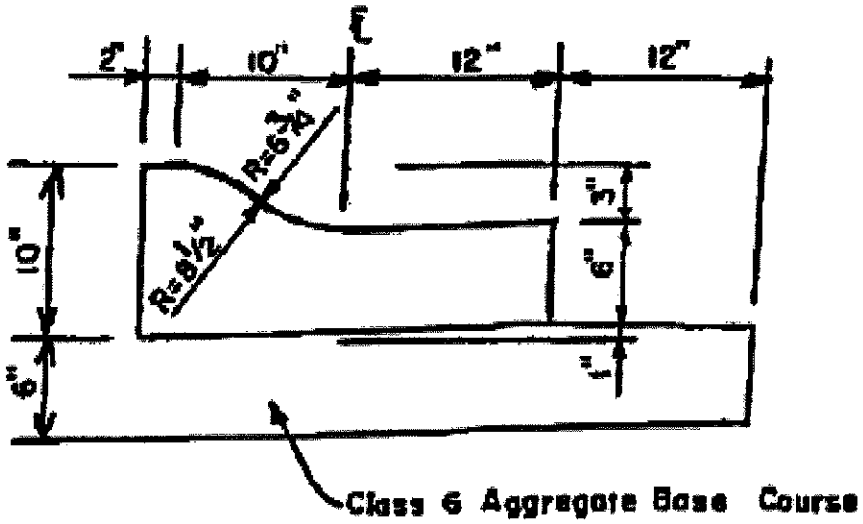
GRANULAR BEDDING MATERIAL SHALL BE PLACED IN 6" MAX. LIFTS



CLASS A EMBEDMENT DRAWING
CONCRETE ARCH ENCASEMENT

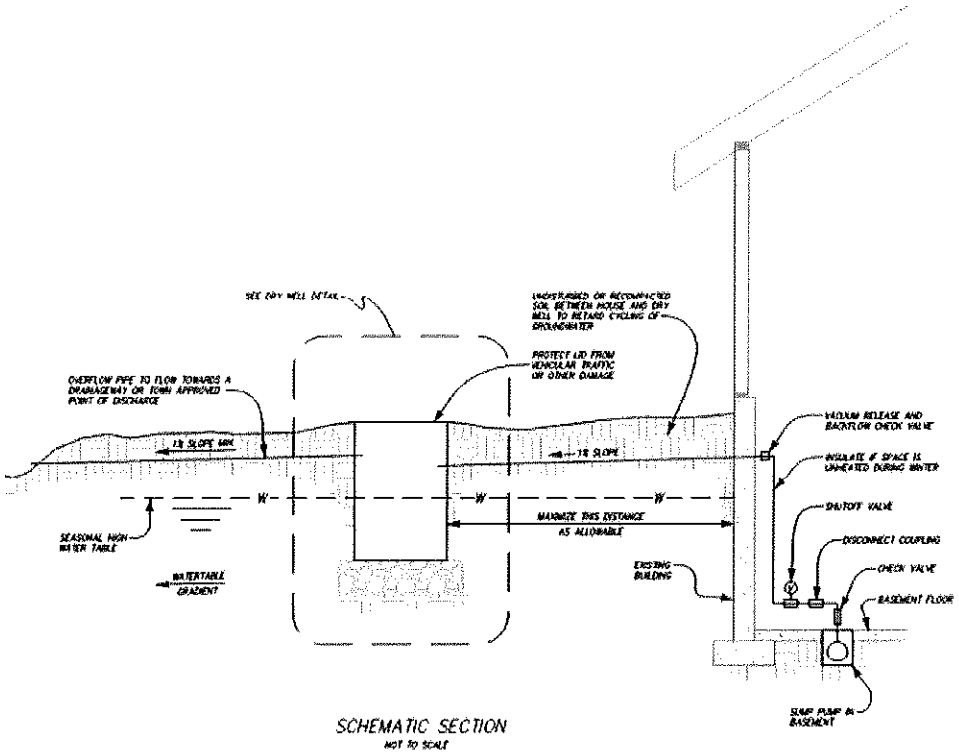
DRAWING NO. 4: CURB AND GUTTER DETAIL

DETAIL.

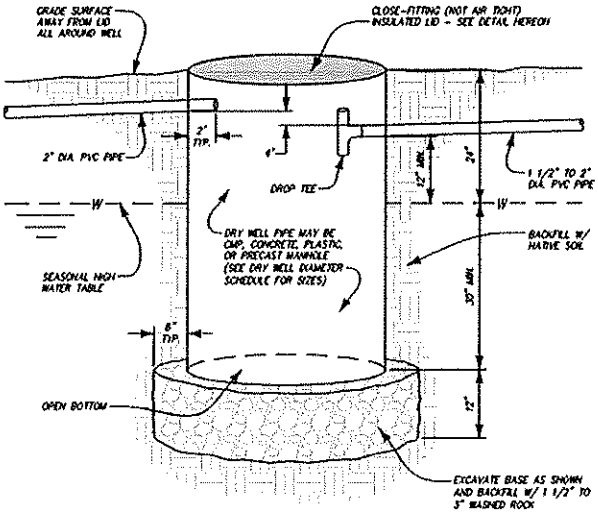


DRAWING NO. 5: DRY WELL DETAIL

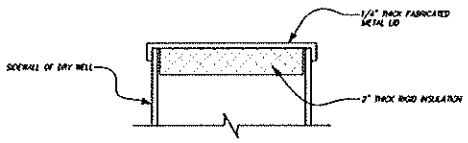
Note: Drawing is an example. Dry well shall be designed for specified flow and approved by the Town.



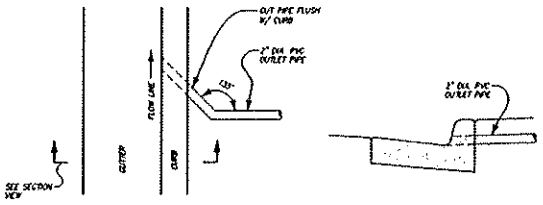
SCHEMATIC SECTION
NOT TO SCALE



DRY WELL DETAIL
NOT TO SCALE



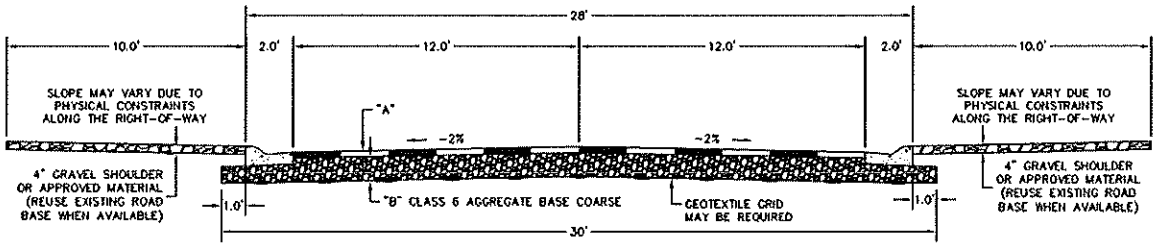
INSULATED LID
NOT TO SCALE



(PLAN VIEW) (SECTION VIEW)

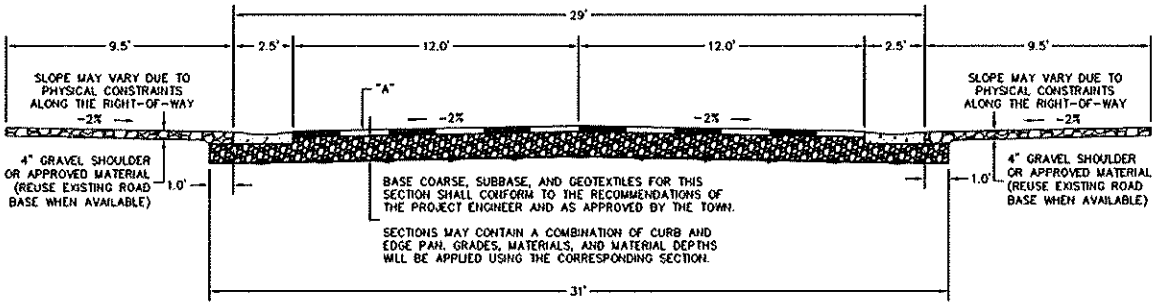
CURB & GUTTER OUTLET
NOT TO SCALE

DRAWING NO. 6: STREET STANDARDS (PAGE 1)



TYPICAL ROADWAY - RS2

SCALE 1"=4'

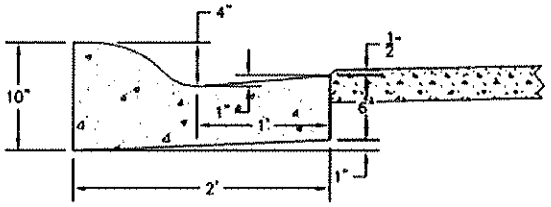


TYPICAL ROADWAY - WITH EDGEPAN

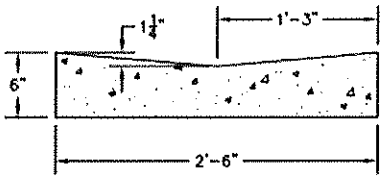
SCALE 1"=4'

ASPHALT WIDTH	24 FEET	ASPHSPHALT SHALL BE A MINIMUM OF 1/2
MINIMUM ASPHALT THICKNESS	3 INCHES	INCH ABOVE THE LIP OF THE GUTTER OF
MINIMUM BASE	6 INCHES	A CATCH CURB AND GUTTER AND PANS.
MINIMUM STRUCTURAL NUMBER	2.1	
ROADWAY CROWN	2.0 %	ASPHALT SHALL BE EVEN WITH THE LIP OF
MAXIMUM GRADE	6.0 %	THE GUTTER OF A SPILL CURB AND
MINIMUM GRADE	0.6 %	GUTTER.
CURB RETURN RADIUS (BACK OF CURB)	15 FEET	

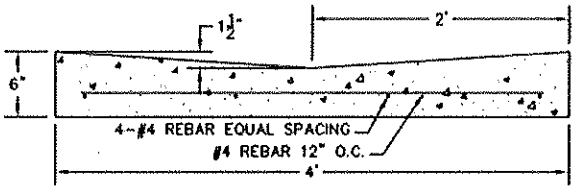
DRAWING NO. 7: STREET STANDARDS (PAGE 2)



TYPICAL CURB AND GUTTER

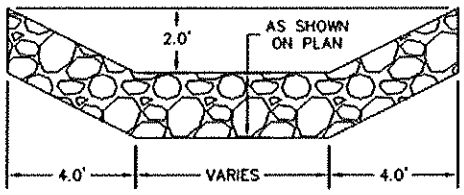


TYPICAL EDGEPAN



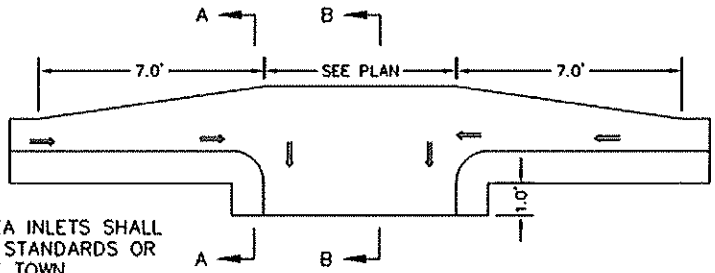
TYPICAL CROSSPAN

NOTE: #4 REBAR SHALL BE PLACED AT 12" O.C. E.W. IN CURB RETURN PANS.



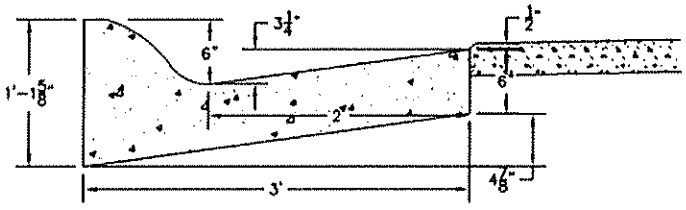
ANGULAR – 12" AVERAGE DIAMETER
ROUNDED– 15" AVERAGE DIAMETER

TYPICAL RIP-RAP

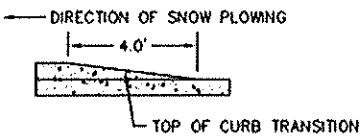


NOTE: CURN AND AREA INLETS SHALL BONFORM TO C.D.O.T. STANDARDS OR AS APPROVED BY THE TOWN.

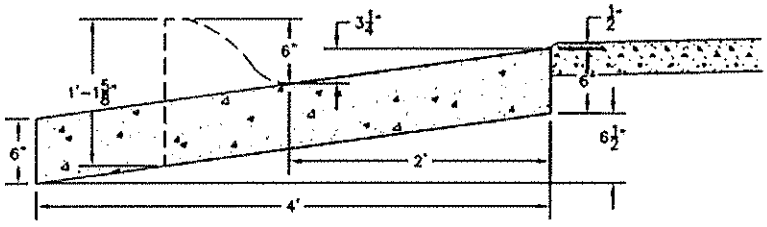
CURB OPENING



SECTION A-A



TYPICAL CURB TRANSITION



SECTION B-B

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TOWN OF CRESTED BUTTE

WATER DISTRIBUTION SYSTEM SPECIFICATIONS

SECTION 300

I. SCOPE

A. The purpose of this Water Distribution System Specification is to set forth the criteria to be used for in the construction of water mains and service lines for approval and acceptance by the Town of Crested Butte.

B. All excavation and backfilling shall be performed in accordance with *Section 200 – General Earthwork Specifications*.

II. MATERIALS:

A. Pipe Larger than Two (2) Inches

1. All water mains shall be a minimum of eight (8) inches in diameter unless approved by the Town.

2. Polyvinyl Chloride (PVC) Pipe

   a. PVC C900, DR 18 unless otherwise approved by the Town.

3. Ductile Iron Pipe (DIP)

   a. DIP for water mains shall conform to *AWWA C151*, Class 52. DIP shall be cement-lined in accordance with *AWWA C104*.

B. Pipe Two (2) Inches and Smaller (Services)

1. Service lines shall be constructed with high-density polyethylene (HDPE) pipe or copper pipe and conform to *AWWA C901*, or other if approved by the Town. Refer to *Item N – Service Lines* for further detail.

C. Joints

1. DIP joints shall be mechanical, push-on, or restrained push-on joints conforming to *AWWA C111*.

2. Joints used for PVC pipe shall be mechanical, push-on, or restrained push-on joints conforming to *ASTM D3139*.

a. Push-on joints shall conform to *ASTM F477*.

b. Restrained push-on joints shall conform to *ASTM A536*.

c. Mechanical joint restraints shall conform to *AWWA C110*.

(a) EBAA Iron "MEGALUG"

3. Two (2) inch and smaller shall be compression type

D. Gaskets

1. Gaskets shall be of neoprene or other synthetic rubber material.

E. Restrained Push-On Joints

1. American "Lok-Fast" or "Lok-Ring"
2. CLOW "Super-Lock"
3. US Pipe "Lok-Tyton" or "Lok-Tyte"
4. Griffin "Snap-Lock"
5. Pacific States "Thrust-Lock"

F. Restrained Glands

1. EBAA Iron Model No. 1100 series

G. Fittings

1. Fittings shall be ductile-iron conforming to *AWWA C152*, Class 350, and mechanical joints conforming to *AWWA C111* with appropriate gaskets for the connected pipe.
2. Smaller than two (2) inch small be compression type.

H. Bonding Straps

1. Bonding straps shall be deoxidized copper conforming to *ASTM-B 152-58* D.H.P., a minimum of 1-1/4 inch wide by 1/8 inch thick and of sufficient length to attach to each pipe.
2. Bonding may be accomplished using Cad Weld method for DIP with a minimum wire requirement of No. 4 BSD Copper.

I. Tracer Wire

1. Provide tracer wire for all PVC and HDPE pipe

2. All tracer wire shall be 12 AWG solid copper wire coated with 45 mil Type HMW - PE blue insulation compliant with *ASTM D1351* specifically designed for direct burial in corrosive soil or water

3. UL listed

J. Tracer Wire Test Stations

1. Four (4) inch with locking lid

2. Manufacturers:

   a. CP Test Services

   b. Glenn Series "Glenn-4"

   c. Or accepted substitution

K. Valves and Valve Boxes

1. General

   a. Valve boxes shall be provided for each valve.

   b. All valves shall open counter clockwise (open left).

   c. All valves shall be equipped with a non-rising stem and standard two (2) inch square wrench nut.

   d. Stems shall provide "o" ring dirt seal and pressure seal packing.

   e. Valve boxes shall be 2 or 3 piece, buffalo-type, with extension as required.

   f. Valves twelve (12) inches and larger shall be provided with a bonnet.

   g. Shafts shall be not less than six (6) inches in diameter and will be capped with a standard flush-type lid weighing not less than ten (10) pounds and marked "WATER".

2. Gate Valves

   a. Gate valves shall be in accordance with *AWWA C509*, equal to the class of pipe being used, with mechanical joint ends.

3. Butterfly Valves

   a. Butterfly valves shall be Town approved and shall conform to *AWWA C504*.

L. Fire Hydrants

1. Fire hydrants shall be in accordance with *AWWA C502*.

2. Guardian Model K81A as manufactured by ITT Kennedy Valve.

3. Adjustable grade device (as required by Town): Gradelok or equivalent.

M. Encasements & Thrust Blocks

1. Concrete used for encasements or thrust blocks shall have a minimum compressive strength of two-thousand five-hundred (2,500) psi in twenty-eight (28) days.

N. Service Lines

1. Service lines shall be a minimum of one (1) inch in diameter.

2. All service lines shall be installed with insulated pipe foam from the water main to the water meter.

3. All HDPE pipe shall have coated, solid locating wire attached and accessible at the ground surface.

4. All service lines shall have curb valves placed at property line. Below grade and accessible.

O. Corporation Stops

1. Size: one (1) inch to two (2) inch

2. Style: ball-style

3. Rating: three-hundred (300) psi

4. Materials shall be approved by the Town prior to installation

P. Curb Valves/Stops

1. All curb valves/stops shall be one (1) inch to two (2) inch ball-style curb valves/stops. Materials shall be approved by the Town prior to installation.

Q. Curb Boxes

1. Materials shall be approved by the Town prior to installation.

R. Service Saddles

1. Materials shall be approved by the Town prior to installation.

III. INSTALLATION

A. Depth

1. Pipe shall be installed a minimum of seven (7) feet from top of pipe to proposed grade, whichever is lower.

B. General

1. No pipe shall be laid when, in the opinion of the Town or their representative, trench conditions are unsuitable.

2. All pipe and fittings shall be carefully lowered into the trench by means of a hoist, ropes, or other suitable tools or equipment in such a manner as to prevent damage to the materials, protective coatings, and linings.

3. Under no circumstances shall water main materials be dropped or dumped into the trench.

4. All pipe and fittings shall be carefully examined for cracks or other defects immediately before installation in final position.

5. Every precaution shall be taken to prevent foreign material from entering the pipe while it is being installed.

6. During laying operations, no debris, tools, clothing, or other material shall be placed in the pipe.

7. At times when pipe laying is not in progress, the open ends of the pipe shall be closed by a watertight plug or other means approved by the Town. If water is in the trench, the plug shall remain in place until the trench is pumped completely dry.

8. As each length of pipe is placed in the trench, the spigot end shall be centered in the bell and the pipe forced on and brought to correct line and grade.

9. Where pipe is laid on a grade of ten percent (10%) or greater, the laying shall start at the bottom and shall proceed upward with the bell ends of the pipe up grade.

10. The cutting of pipe for inserting valves, fittings, or closure pieces shall be done in a neat and workmanlike manner without damage to the pipe and so as to leave a smooth end at right angles to the axis of the pipe.

11. Wedging or blocking of the bell or pipe is not permitted for achieving slope before backfilling.

C. Bonding Strap

1. For ductile iron pipe installation, a bonding strap shall be installed across each joint to provide metal to metal continuity. Bonding straps shall be attached at each end by means of magnesium weld or other approved method.

D. Valves

1. Valves shall have the interior cleaned of all foreign matter before installation.

2. Valves shall be inspected in the open and closed positions to ensure that all parts are in working condition.

3. Valves shall be set and joined to pipe/fittings in the manner specified for cleaning, laying, and joining pipe and fittings.

E. Valve Boxes

1. Valve boxes shall be centered and plumb over the wrench nut of the valve with the box cover flush with the level of the finished grade for paved surfaces and slightly below grade for dirt installation. Or at such level as may be directed by the Town.

2. Upon completion of backfill around the valve box, a standard 4 x 4 timber shall be placed vertically next to each valve box, the exposed portion of which shall be at least found (4) feet above finished grade for new construction, where applicable.

F. Fire Hydrants

1. Fire hydrants shall be installed to finished grade elevation. An appropriately sized class 150 valve shall be required with each hydrant, and both shall be installed at the location designated by the Town.

2. Hydrant drainage

    a. Pervious soil – Provided at the base of the hydrant by placing coarse gravel or crushed stone from the bottom of the trench to at least six (6) inches above the water openings (weep holes) in the hydrant and to a distance of one (1) foot around the elbow.

    b. Clay or other impervious soils – Provided by a drainage pit two (2) feet in diameter and three (3) feet deep excavated below the hydrant and filled compactly with coarse gravel or crushed stone under and around the elbow of the hydrant and to a level of six (6) inches above the water openings (weep holes).

G. Thrust Protection

1. All plugs, tees, valves, bends, and hydrants or a change in direction of ten (10) degrees or more shall be mechanically restrained to provide 100% thrust protection.

2. Restrained Joint Pipe

    a. Pipe shall be restrained in each direction from a plug, tee, bend, hydrant, or change of ten (10) degrees or more as shown on *Drawing No. 9 – Restrained Pipe Detail*, unless a design is provided by a Registered Professional Engineer and approved by the Town,

3. Thrust Blocks

    a. Concrete thrust blocks shall be placed between the solid ground of the trench wall and the fitting.

    b. The backing shall be so placed that the pipe and fitting joints will be accessible for repair.

    c. Plastic "cloth" shall be placed between fitting and concrete. Unless a design is provided by a Registered Professional

Engineer and approved by the Town, thrust blocks shall be as shown on *Drawing No. 8 – Thrust Block Detail.*

H. Encasements

1. Prior to placing the concrete for cradles or encasements, temporary supports consisting of concrete blocks or bricks shall be used to support the pipe in place.

2. Not more than two (2) supports shall be used for each pipe length, one adjacent to the shoulder of the bell and the other near the spigot end.

3. No encasements shall be poured until the Town has inspected and approved the pipe and supports to be encased.

I. Water Taps and Services

1. Water taps and services shall be a minimum of seven (7) feet from top of pipe to proposed finished grade.

2. A bonding strap shall be installed on all DIP.

3. Installation of service lines and taps on the water main shall be installed to the property line at the time of water main construction.

4. Install curb valve at the property line with tracer wire accessible at the curb valve location.

5. For all service taps, follow manufacturer recommendations for minimum water main size for direct tapping.

6. Water taps larger than one (1) inch on existing cast iron and ductile iron pipe shall be installed using tees. Saddles will not be acceptable unless approved by the Town.

7. Each two (2) inch and smaller service line that is machine tapped shall be connected to the water main through a brass ball-style corporation stop. The main shall be tapped at twenty-two (22) degrees from the horizontal centerline of the pipe, and the stop must be turned so that the T-handle will be on the side.

8. All copper water service lines shall be installed with a frost loop. See *Drawing No. 12 – Service Connections Detail.*

9. Any water service line installation that crosses an irrigation ditch requires the installation of culvert pipe in the irrigation ditch. Installation and materials shall be approved by the Town.

J. Relationships Between Water System Piping and Sanitary Sewer System Piping

1. "Lines" shall mean all water or sewer mains.

2. When water and sewer lines are within ten (10) feet horizontally of each other and the sewer line is above or less than eighteen (18) inches below the water line, the portion of the sewer line within that area shall

   a. Be construction of approved waterline pipe and joints (PVC C900);

   OR

   b. Be constructed of SDR 35 PVC sewer pipe with all joints and pipe within ten (10) feet of the water line encased in concrete that is a minimum of six (6) inches thick centered on the crossing pipe.

3. In all cases, suitable backfill or other structural protection shall be provided to preclude the settling or failure of both pipes.

4. Crossings of sewer and water lines shall not be at an angle less than forty-five (45) degrees, unless approved by the Town.

5. See *Drawing No. 11 – Sanitary Sewer – Water Pipe Crossing Detail.*

IV. INSPECTION AND TESTING

The Contractor shall furnish all labor, equipment, tools, water, and other incidental items required to conduct the tests. Test results are not considered valid without the presence of the Engineer/Town Representative throughout the test.

A. Water Main Pressure Testing

1. Water mains shall be tested for pressure and leakage in accordance with *AWWA C600* and as specified herein.

2. No pressure testing shall be performed until all thrust blocks have been placed and cured, and the pipeline backfilled adequately to prevent any movement or lifting of the pipe. Pavement or other

permanent structures shall not be placed until all testing are satisfactorily completed.

3. Test Pressure

   a. The test pressure for all pipes shall be fifty percent (50%) more than the maximum operating pressure, as determined by the Town, at the lowest elevation of the test section, but shall be a minimum of one-hundred fifty (150) psi at any elevation in the test section.

4. Filling

   a. The pipeline shall be filled with potable water at least twenty-four (24) hours before being subjected to the hydrostatic pressure test. Each section of pipeline shall be filled slowly and all air expelled by means of taps at points of highest elevation.

5. Leakage

   a. The specified test pressure shall be applied by means of a pump connected to the pipe in a manner satisfactory to the Town. The leakage test shall be performed for a minimum of two (2) hours. No pipe installation will be accepted if the leakage for the section of line being tested is more than the rate calculated using a standard formula.

$$L = \frac{ND\sqrt{P}}{7,400}$$

where:

L = testing allowance, gallons per hour
N = number of joints in the tested line
D = nominal pipe diameter, inches
P = average test pressure, psi

Table 2620-1 Hydrostatic Testing Allowance per 1000 ft. of Pipeline (gph)

Avg. Test Pressure (psi)	Nominal Pipe Diameter (in.)												
	3	4	6	8	10	12	14	16	18	20	24	30	36
450	0.48	0.64	0.96	1.27	1.59	1.91	2.23	2.55	2.87	3.19	3.82	4.78	5.73
400	0.45	0.60	0.90	1.20	1.50	1.80	2.10	2.40	2.70	3.00	3.60	4.50	5.41
350	0.42	0.56	0.84	1.12	1.40	1.69	1.97	2.25	2.53	2.81	3.37	4.21	5.06
300	0.39	0.52	0.78	1.04	1.30	1.56	1.82	2.08	2.34	2.60	3.12	3.90	4.68
275	0.37	0.50	0.75	1.00	1.24	1.49	1.74	1.99	2.24	2.49	2.99	3.73	4.48
250	0.36	0.47	0.71	0.95	1.19	1.42	1.66	1.90	2.14	2.37	2.85	3.56	4.27
225	0.34	0.45	0.68	0.90	1.13	1.35	1.58	1.80	2.03	2.25	2.70	3.38	4.05
200	0.32	0.42	0.64	0.85	1.06	1.27	1.49	1.70	1.91	2.12	2.55	3.19	3.82
175	0.30	0.40	0.60	0.79	0.99	1.19	1.39	1.59	1.79	1.99	2.38	2.98	3.58
150	0.28	0.37	0.55	0.74	0.92	1.10	1.29	1.47	1.66	1.84	2.21	2.76	3.31
125	0.25	0.34	0.50	0.67	0.84	1.01	1.18	1.34	1.51	1.68	2.01	2.52	3.02
100	0.23	0.30	0.45	0.60	0.75	0.90	1.05	1.20	1.35	1.50	1.80	2.25	2.70

6. Leakage is defined as the quantity of water to be supplied to the section of pipeline being tested, which is necessary to maintain the specified leakage test pressure after the pipe has been filled with water and the air expelled.

B. Water Main Disinfection

1. After completion of pressure testing and prior to being placed into service, all new water mains and repaired portions or extensions of existing mains shall be chlorinated by the Contractor in accordance with *AWWA C651.*

2. Disinfection can be completed simultaneously with pressure test if approved by the Town.

3. Valves shall be manipulated so that the strong chlorine solution in the line being treated will not flow back into the line supplying the water. Check valves may be used if desired.

4. Preliminary Flushing

   a. Sections of pipe to be disinfected shall first be flushed to remove any solids or contaminated material that may have entered the pipe.

   b. If a hydrant was not installed at the end of the main, then a 2-1/2 inch tap shall be installed in order to flush the line.

c. Preliminary flushing can be eliminated if approved by the Town.

5. Form of Applied Chlorine

   a. Chlorine shall be applied by one of the methods described in *AWWA C651*, subject to approval by the Town.

   b. Per AWWA C651, tablet chlorination is only acceptable if installed pipe is clean and free of debris and groundwater during installation.

   c. If the "tablet method" is utilized, then flushing shall take place after chlorination.

6. Point of Application

   a. The prepared point of application of the chlorinating agent is at the beginning of the pipeline extension or any isolated section of it, and through a corporation stop inserted in the pipe.

   b. The water injector for delivering the chlorinated water into the pipe shall be supplied from a tap made on the pressure side of the gate valve controlling the flow into the pipeline extension.

   c. Alternate points of application may be used when approved or directed by the Town.

7. Retention Period

   a. Treated water shall be retained in the pipe for at least twenty-four (24) hours.

   b. After the retention period, the chlorine residual at pipe extremities and at other representative points shall be at least twenty-five (25) mg/L.

8. Final Flushing, Neutralization, and Testing

   a. All chlorinated water shall be neutralized to a chlorine residual of no greater than one (1.0) ppm before discharge as approved or directed by the Town.

   b. Following chlorination, all treated water shall be thoroughly flushed from the newly laid pipe at its extremity until the

replacement water throughout its length shows upon testing a chlorine residual of less than one (1) mg/L.

C. Chlorinating Valves and Hydrants

1. In the process of chlorinating newly laid pipe, all valves and other appurtenances shall be operated while the pipeline is filled with the chlorinating agent and under normal operating pressure.

2. After final flushing, and before the water main is placed in service, bacteriologic tests shall be performed in accordance with *AWWA C651*.

D. PVC Water Pipe Continuity Testing

1. Notify Town 24 hours in advance to schedule testing

2. Test tracer wire for continuity, in the presence of Owner and Engineer, after backfill is complete and before Substantial Completion

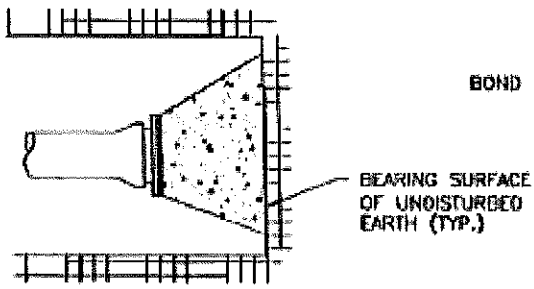
3. Continuity test to consist of locating the PVC water pipe with an electronic-type pipe locator

4. If test is negative for continuity, repair or replace as necessary to achieve continuity

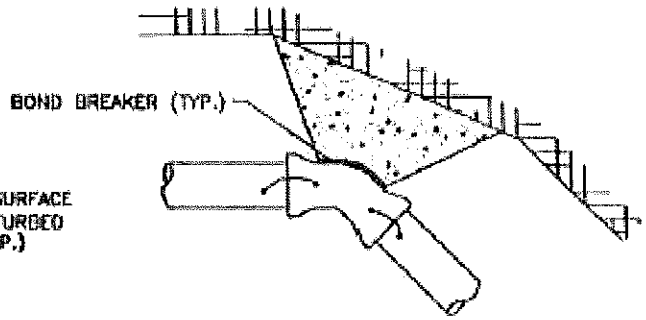
E. Trench Backfill Compaction Testing

1. Testing shall be performed according to *Section 200 – General Earthwork Specifications, Part IV – Inspection and Testing.*

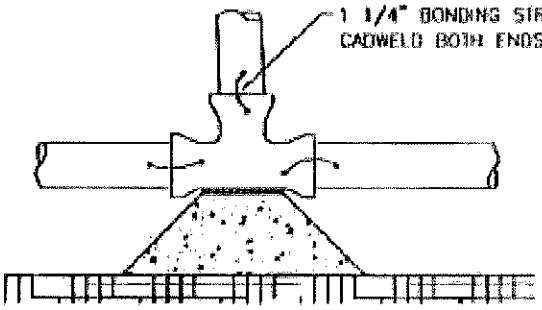
DRAWING NO. 8: THRUST BLOCK DETAIL



DEAD END



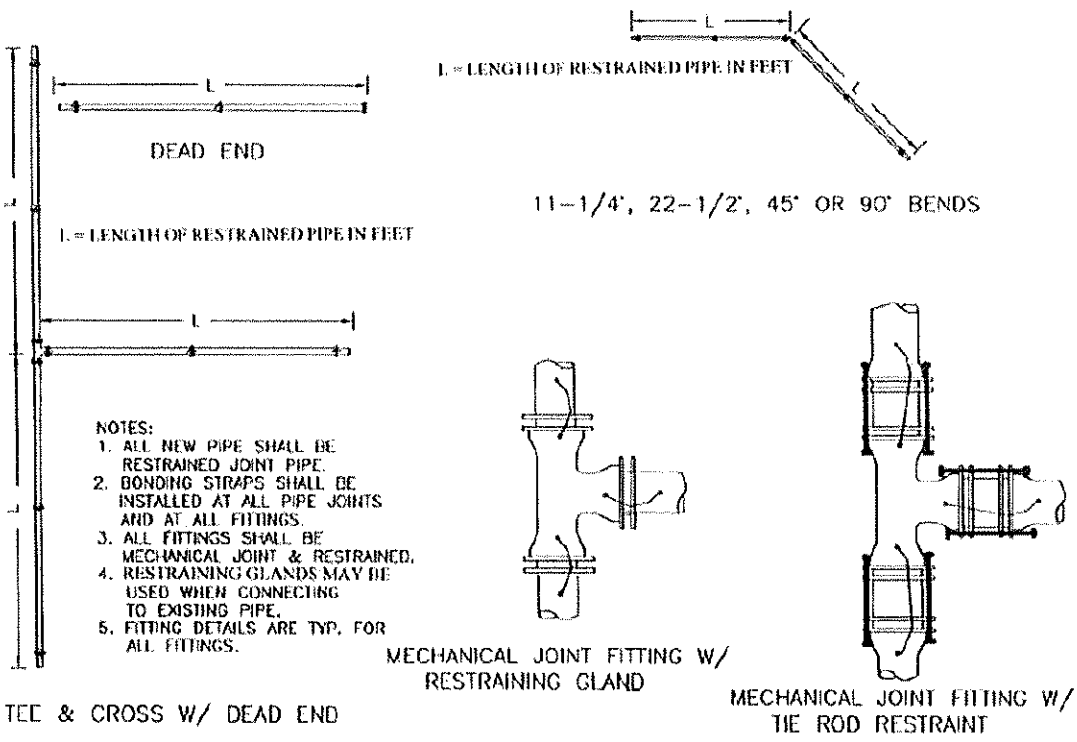
11-1/4", 22-1/2", 45° OR 90° BENDS



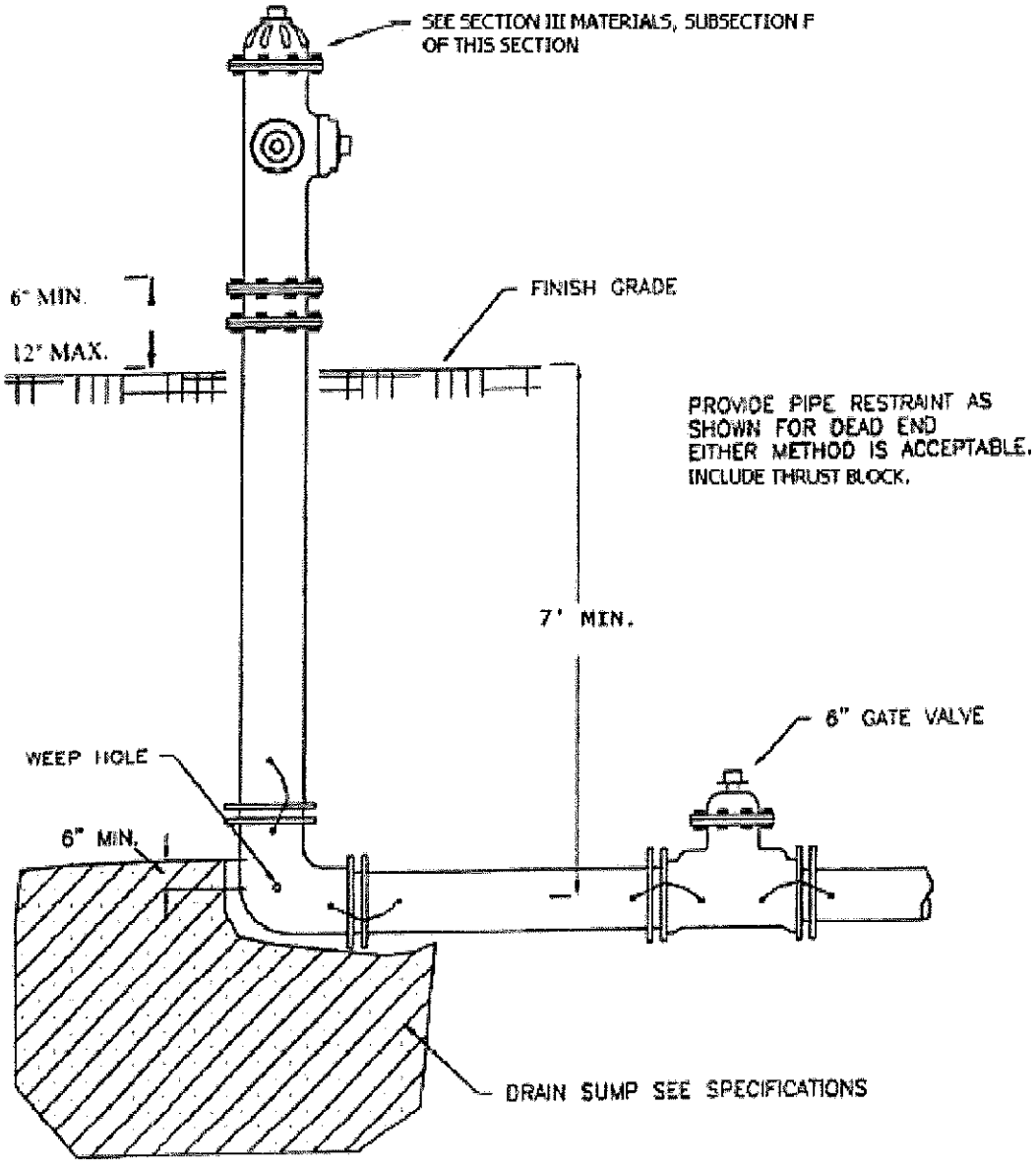
TEE & CROSS W/ DEAD END

NOTES:
1. ALL FITTINGS REQUIRING THRUST BLOCKS SHALL BE WRAPPED IN POLYETHYLENE BOND BREAKER MATERIAL.
2. CONCRETE SHALL NOT BEAR ON BOLTS OF MECHANICAL JOINT FITTINGS.
3. PIPE AND FITTINGS MAY BE EITHER MECANICAL JOINT OR PUSH ON JOINT.

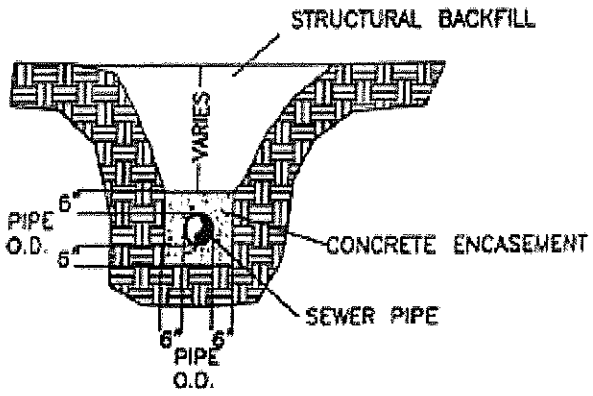
DRAWING NO. 9: RESTRAINED PIPE DETAIL



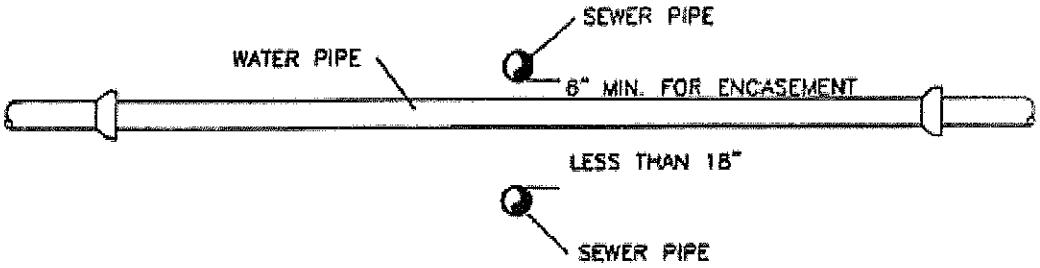
DRAWING NO. 10: STANDARD FIRE HYDRANT DETAIL



DRAWING NO. 11: SANITARY SEWER – WATER PIPE CROSSING DETAIL



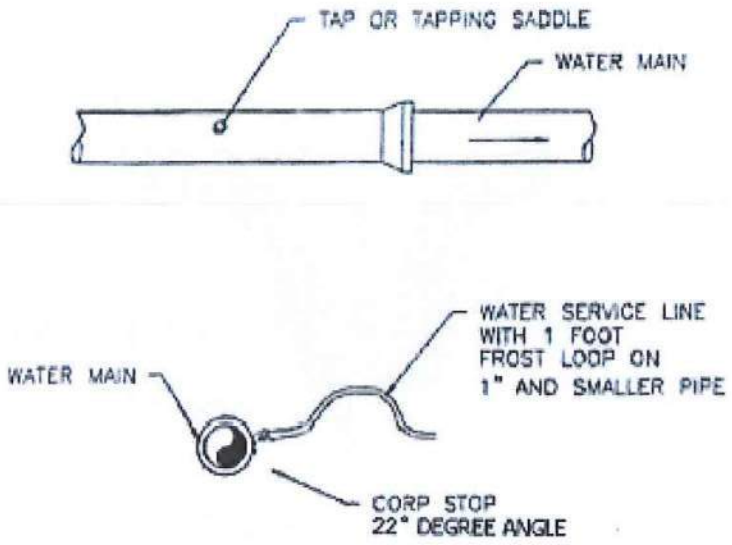
CONCRETE ENCASEMENT



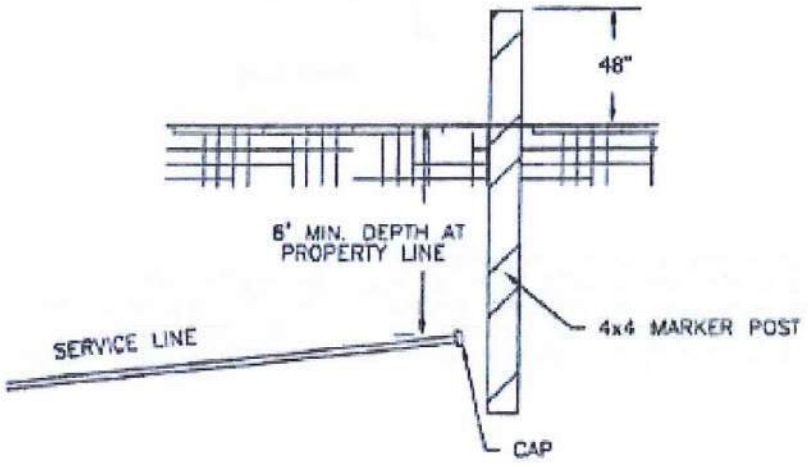
PIPE CROSSING

NOTE:
IF THE SEWER PIPE IS ABOVE THE WATER PIPE
OR IF THE SEWER PIPE IS LESS THAN 18" BELOW THE WATER PIPE
THE SEWER PIPE MUST BE CONCRETE ENCASED TO PROTECT THE WATER PIPE.
SEE SPECIFICATION SECTION 500 OR 600 FOR PROTECTION REQUIRED.
PROTECTION MUST EXTEND A MINIMUM OF 10' EACH WAY FROM THE CROSSING.

DRAWING NO. 12: SERVICE CONNECTIONS DETAIL



DRAWING NO. 13: WATER SERVICE MARKER DETAIL



TOWN OF CRESTED BUTTE

SANITARY SEWER SYSTEM SPECIFCATIONS

SECTION 400

I. SCOPE

The purpose of the Sanitary Sewer System Specification is to set forth the criteria to be used in the construction of sanitary sewer mains, services, manholes, and lift stations for approval and acceptance by the Town of Crested Butte.

All requests for information on the Town's wastewater system shall be made via Wastewater System Division. The Town makes no representation that released documents and files (e.g. record drawings, maps, reports, studies, etc.), hard copy or otherwise, or the information they contain, are accurate, current, or complete.

II. MATERIALS

A. Gravity Sanitary Sewer Main

1. All sanitary sewer mains shall be constructed with SDR 35 PVC, C900 PVC, or other as approved by the Town.

B. Sanitary Sewer Pressure Main

1. Four (4) inch minimum inner diameter

2. Ductile iron with 316 stainless steel nuts and bolts unless otherwise approved by the Wastewater Division

    a. Provide cathodic protection or polyethylene encasement.

3. High-Density Polyethylene (HDPE): may be permitted provided thermal expansion factors are considered. Approval from Town required for installation.

    a. Provide tracer wire.

C. Fittings

1. PVC Sewer Pipe: Double-gasket push-on joints, for sanitary use

    a. "Mission" (rubber) couplings are only to be used upon Town approval.

b. Push on type plastic or PVC fittings without sanitary sewer sweeps shall not be permitted.

2. PVC C900

a. Inside diameter shall correspond with inside diameter of the C900 PVC pipe installed.

(a) "Lips" at improperly specified fitting can snag solids resulting in hydraulic flow constrictions.

3. No-hub cast iron pipe

a. Town approved cast iron or stainless steel fittings required

D. Manholes

1. Size: Four (4) foot diameter with two (2) foot cones

2. Manholes shall be pre-cast reinforced concrete. Cast-in-place reinforced manholes may be used upon approval from the Town.

3. Rubber boots shall be used on all manhole penetrations. Grouting the inside of the penetration shall also be performed.

4. Manholes shall have a protective inside coating.

5. Manholes shall be provided without rungs.

6. Over lapping joints and rub'r-nek gaskets, or similar product, shall be used at all barrel section joints.

7. Standard-sized frames and covers shall be specified as depicted in standard details on approved Construction Drawings.

8. Coatings

a. Interior: Tnemec or Sherwin Williams as specified below,

(a) Filler – Tnemec Series 218 as needed to fill voids and bugholes

(b) First coat – Tnemec Series 66HS, thinned 10%, @ 100 sfpg

(c) Second coat – Tnemec Series 66HS @ 160 sfpg

(d) Third coat – Tnemec Series 66HS @ 160 sfpg

OR

(e) Filler – Sherwin Williams Dura-Plate 2300 as needed to fill voids and bugholes

(f) First coat – Sherwin Williams Dura-Plate 235, thinned 10%, @ 100 sfpg

(g) Second coat – Sherwin Williams Dura-Plate 235 @ 160 sfpg

(h) Third coat – Sherwin Williams Dura-Plate 235 @ 160 sfpg

b. Exterior (as required by Town)

(a) Bituminous Dampproofing Exterior Coating

c. Manufacturers:

(a) Tnemec

(b) Sherwin Williams

(c) Or approved equal

E. Service Lines and Connections

1. Four (4) inch minimum inner diameter unless otherwise approved by the Town

2. SDR 35 PVC, C900 PVC, or SCH 40 PVC

3. Service taps into sewer mains shall use a factory tee or wye, gasket saddle wye or gasket fitting in conjunction with a repair sleeve coupling. If a new sewer main is installed with pre-taps, a factory tee or wye is recommended.

4. A saddle wye must be gasketed with all stainless steel clamps.

F. Lift Stations

1. 3-phase, 480V, 4-wire, if available

2. Backup power supply required. This can be in the form of external connections and a transfer switch to accommodate a portable generator.

3. Davit crane: Thern Commander 5PT10G with Pedestal Base.

4. Wet Well Internal Coating: protective coating consistent with *Item D.8 – Coatings*, above, or as approved by the Town.

5. Materials and Equipment Within Wet Well

    a. Mechanical and Electrical: Explosion Proof.

    b. Hardware: Stainless Steel

6. Horizontal Well Coverings: Open fully (minimum 90 degrees), and equipped with a device to prevent accidental closure.

7. Provide a concrete pad around the wet well hatch with a minimum diameter of ten (10) feet.

8. Emergency Bypass Hose Connection Assembly

    a. Connection assembly to the pressure main exiting the lift station to allow a station lift bypass with a portable pump

    b. The hose connection assembly shall be equipped with a plug valve in the closed position and a four (4) inch coupling type cam-lock connectors (female) with a protective cam-lock (male).

9. Isolation valves: Plug type.

10. Pumps: Submersible wastewater pumps. Pump type shall be approved by Town.

    a. Minimum four (4) inch suction and discharge

    b. Quantity: Two (2) Installed; One (1) Shelf Spare

    c. Grinder Pumps shall not be permitted.

    d. Removable without entering the wet well.

    e. Each pump shall have an hour meter installed at the control panel.

11. Any special tools required for such work as operation, calibration, adjustment, or service maintenance must be provided to the Town and listed in the O & M manual.

12. Electrical Control System

    a. Control system brand, type, and configuration shall be approved by the Town.

    b. Control circuitry must be configured so that failure of any single component does not disable both pumps.

    c. Control boxes must be designed to operate in -40 to 100 degree F ambient temperature and meet NEMA standards.

    d. Provide a convenience receptacle on its own circuit located near the electrical control system.

    e. Wet well must be equipped with an ultrasonic level sensor with a float back up. Type of sensor must be approved by Town.

    f. Lift station alarms

        (a) Red alarm light (visible from the nearest road) and audible alarm (audible from 100 feet) to indicate a high level situation.

        (b) Red or yellow light visible from the nearest road indicating pump motor seal failure and overheat conditions

        (c) Alarm dial out capability with a twenty-four (24) hour back up. The dialer must call out when the high level alarm signals and/ or in the event of a power failure.

G. Air Release/ Vacuum Relief Valves

1. Designed specifically for sewage applications

2. All interior mechanical components shall be fabricated of stainless steel. Valves with plastic components are not acceptable.

3. Air release/vacuum relief valves are required on all force mains and shall be equipped with fittings to allow for back flushing

H. Pressure Cleanouts

1. Constructed with viton-gasket stainless steel pressure blank covers, or approved equal.

III. INSTALLATION

A. General

1. The Contractor shall be responsible for providing and maintaining temporary power as necessary to maintain normal system operations.

2. Spills

   a. The Contractor is responsible for any costs associated with sewage spills resulting from construction operations, which may include, but are not limited to, clean-up, regulatory fines, and/or penalties that may be imposed by environmental regulatory agencies (EPA and/or CDPHE).

   b. The Contractor shall reimburse the Town for any emergency response effort that may be required by Government forces to mitigate the adverse effects of any sewage overflow or spill resulting from the Contractor's operations.

3. For any new concrete surface that will be exposed to sewage flow, the Contractor shall maintain sewage bypass/diversion operations for the duration of the specified cure time for the concrete.

4. Connection strategies to existing asbestos cement sanitary sewer mains require Town approval

5. Abandoning

   a. Prior to the abandonment of any sanitary sewer main, the Contractor shall fill the pipe with flowable fill.

   b. Manholes to be abandoned shall have its cone section removed and disposed of, pipe penetrations plugged with class "c" concrete and the remaining riser structure backfilled and compacted to finished grade.

B. Bypass Pumping

1. To the maximum extent practical sewage flow shall not be interrupted.

2. The Contractor is responsible for diverting sewage as necessary for performance of work.

3. The Town shall not perform sewage diversion operations on behalf of the Contractor. The Contractor shall supply all labor and equipment necessary to completely perform the work.

    a. This may include, but is not limited to, bypass pumps, tank trucks, temporary piping/hoses, etc.

C. Sanitary Sewer Mains

1. General

    a. The Contractor is required to properly protect and cover PVC pipe staged at the job site from ultraviolet radiation.

    b. Install sanitary sewer mains in the Town right-of-way.

    c. Structures (including but not limited to buildings, backflow preventers, transformer pads, mechanical equipment, and anchor walls) shall not be built over new or existing sewer lines.

    d. As a general rule-of-thumb, consider a 1:1 depth to width sewer line excavation clearance. For structures that can transmit live loads to the foundation (e.g. flag poles, utility poles), a structural or soils engineer should establish the appropriate horizontal setback distance, but in no instance, shall any structure be located closer than three (3) feet from any sewer line.

    e. Minimum pipe cover shall be six (6) feet.

    f. All sewer lines must be identified with metallic buried warning and identification tape.

    g. Separation for potable water mains shall be per *Section 300 – Water Distribution System Specifications, Part III – Installation, Item J – Relationships Between Water System Piping and Sanitary Sewer System Piping*, and *Drawing No. 11 – Sanitary Sewer – Water Pipe Crossing Detail.*

    h. Trees shall not be planted closer than twenty (20) feet, and shrubs/hedges not closer than five (5) feet from a new or existing sewer line. Also, in the event that excavation for

future repairs to the underground utility lines become necessary, the Town shall not fund for removal, relocation, disposal, or replacement of any affected planting.

i. Wedging or blocking of the bell or pipe is not permitted for achieving slope before backfilling.

j. Pipe shall be laid upgrade from structure to structure, with bell end upgrade unless otherwise directed or permitted by the Engineer.

2. Pressure Mains

a. Appropriate air release provisions shall be installed at all high points in the pressure main where air can accumulate.

b. If isolation valves are installed in a pressure main, install pressure cleanouts immediately downstream of the isolation valve.

c. The blank cover for the valve shall be installed such that the cleanout flange face is parallel to the finished grade, twelve (12) inches below grade, and within a manhole structure.

d. Sewer force main shall be marked with detectable warning tape to identify the pipe as a sewer force main to prevent accidental water service taps.

D. Manholes

1. Location

a. Install outside of drainageways, including but not limited to, valley pans, curb and gutter lines, sump depressions, or drainage swales where rainfall or snow melt runoff can accumulate.

b. Manholes and valve structures shall be located in roadway areas or in serviceable vehicle corridors.

c. Install so as to ensure that maintenance vehicles are not forced to drive over grassed lawns or landscaped areas.

d. Adequate clearance between the edge of a building (wall and roof line) and other structures shall be provided to enable repair of the lines by use of heavy equipment.

2. A manhole is required at the commencement of a sewer main.

3. A stub out in a manhole may be required if deemed necessary by the Town for future expansion.

4. Drop manholes are to be avoided to the maximum extent practical.

    a. Only inside drop manholes will be permitted.

5. Changes in direction of flow through the manhole shall be made with a smooth, curved channel having as large a radius as possible.

    a. The change in size of channels shall be made gradually and evenly and shall be formed directly in the concrete.

    b. The floor of the manhole outside of the channel shall be finished to a smooth surface and shall slope to the channel.

    c. The minimum thickness of the base shall not be less than eight (8) inches under the invert of the manhole channel.

6. No sanitary sewer services shall be tied directly into any manhole structure, unless authorized by the Wastewater Division.

7. Connections to manholes

    a. Influent pipe connections to manholes shall be made at the properly channelized invert of the manhole, whether it is a direct connection or a drop connection.

    b. "Waterfall" type connections are not permitted.

    c. All pipe penetrations shall be made perpendicular to the circumference of the manhole. Angled deflections at existing flow channels are not be permitted.

    d. Pipe penetrations into manholes shall not extend more than one inch past the manhole wall.

    e. Connection to existing manholes where there is no existing pipe stubbed out shall be made in such a manner that the finished work will conform to the maximum extent practical to the essential requirements specified for new manholes.

        (a) The Contractor shall core an opening in the existing manhole to insert the pipe.

(b) A rubber gasket and grout shall be used to seal the penetration.

(c) Existing concrete foundation bench shall be shaped to the cross-section of the new pipe in order to form a smooth continuous invert.

(d) Cement grout shall be used as necessary to smoothly finish the new invert.

8. Manhole frames shall be firmly (structurally) affixed to the top of manhole cone and grouted around the ring of the frame.

9. All manhole frames and covers shall be adjusted to new finished grade.

E. Service Lines and Connections

1. Approval from the Wastewater Division is required before tapping any sanitary sewer main.

   a. The Contractor shall provide the Town with at least three (3) days notice prior to tapping any sanitary sewer main.

   b. This includes approval of the date and time of the tap.

   c. No sewer main shall be tapped without a representative from the Town present.

2. Minimum pipe cover for sewer services is five (5) feet.

3. Service connections shall be made in the top quarter of the main.

4. Contractor shall identify the material of the main and have the proper saddle.

5. Holes for saddle connections shall be made by mechanical hole cutters and shall be the full diameter of the service line.

   a. Holes shall be de-burred and carefully beveled to provide a smooth hole shaped to conform to the fitting.

6. For all building sewers, including housing units, a sanitary cleanout shall be installed within five (5) feet from the building line.

   a. Additional building sewer cleanouts shall be installed at intervals not to exceed one-hundred (100) feet in straight

runs and at each horizontal change in direction in a sanitary sewer service.

F. Lift Stations

1. Check valves, isolation valves, and emergency bypass attachments must be installed in a valve box outside of the wet well.

2. The lift station must be accessible to maintenance vehicles.

3. The area within twenty (20) feet diameter of the lift station must maintain the same grade as the wet well hatch. The area within 20 feet diameter of the lift station as well as along the access way to the lift station must have twenty (20) feet of vertical clearance.

4. Service Connections to Lift Stations

   a. No sewer services may be connected to the lift station wet well without prior authorization from the Wastewater Division.

   b. No services may be connected to the influent line of the lift station until final approval is obtained.

5. Contractor shall post laminated copy of electrical wiring diagram which depicts all breakers, relays, controls, switches, alarm system, etc. at the lift station

IV. INSPECTION AND TESTING

A. General

1. Testing shall not occur unless a representative from the Town or its agent is present.

2. All pressure and leakage testing shall be performed by the contractor under direct control of the Engineer or an approved representative.

3. The final testing and approval shall only occur after backfilling and compaction. The Contractor may request that a preliminary test be performed prior to backfilling.

4. A visual inspection by the Town is required before any sewer line or manhole is covered.

5. The Town may require secondary testing if further construction if performed on the line or adjacent lines that is judged to have weakened the integrity of the tested line.

6. In the event that service taps are pre-tapped, all testing and inspection shall be performed after the last pre-tap has been made.

7. Notification

    a. Provide Town staff with a minimum of three (3) working days for final acceptance inspection of the new sanitary sewer main construction and sanitary sewer service tap and construction.

B. Backfill and Compaction Testing

1. Trench backfill compaction testing shall be performed according to *Section 200 – General Earthwork Specifications.*

C. Gravity Sanitary Sewer Main Pressure Testing – Air

1. On all sanitary sewer mains, the Contractor shall conduct pressure testing using low-pressure air testing.

2. Contractor shall provide all labor, equipment, and any additional items necessary to perform the air test.

3. For sanitary sewer mains installed above the ground water table, the following procedure shall be followed:

    a. Plugging

        (a) Isolate section of sanitary sewer main to test using inflatable stoppers or other suitable test plugs.

        (b) Plug and cap ends of all branches, laterals, wyes, tees (including factory tees), etc., that are included in the test section.

        (c) Securely brace all plugs or caps to prevent blow-out.

        (d) One of the end plug caps shall include an inlet tap to connect portable air source.

    b. Connect air hose to the inlet tap.

    c. Add air solely to the test section until pressure reaches four (4) psig

    d. Allow pressure to stabilize such that a pressure between four (4) psig and three point five (3.5) psig is maintained for at least two (2) minutes.

e. Disconnect air supply and decrease the pressure to three point five (3.5) psig before starting test.

f. Use the Time-Pressure Drop Method to determine if the segment of pipe is "acceptable".

a. Minimum specified time required for a one (1.0) psig pressure drop based on size and length of pipe is included in the following table:

Pipe Diameter (inches)	Specification Time for Length Shown (Minutes : Seconds)							
	100ft	150ft	200ft	250ft	300ft	350ft	400ft	450ft
8	7:34	7:34	7:34	7:34	7:36	8:52	10:08	11:24
10	9:26	9:26	9:26	9:53	11:52	13:51	15:49	17:48
12	11:20	11:20	11:24	14:15	17:05	19:56	22:47	25:38
15	14:10	14:10	17:48	22:15	26:42	31:09	35:35	40:04
18	17:00	19:13	25:38	32:03	38:27	44:52	51:16	57:41
21	19:50	26:10	34:54	43:37	52:21	61:00	69:48	87.31

D. Pressurized Sanitary Sewer Main Pressure Testing (Force Mains)

1. Test all sanitary sewer force mains in accordance with the Hydrostatic Testing Requirements of *AWWA C600.*

a. All force mains shall be given a hydrostatic test of at least one point five (1.5) times the shutoff head of the connected pumps or one-hundred fifty (150) psi, whichever is greater.

b. Labor, equipment, and supplies required for the test shall be furnished by the Contractor.

(a) The test pressure shall not exceed the rated pressure of the valves in the pipeline.

c. Loss of water pressure during test shall not exceed five (5) psi in a two (2) hour period.

d. Where practicable, test between line valves or plugs in lengths of not more than one-thousand five-hundred (1,500) feet.

e. Procedure

(a) Slowly fill pipe with water; the specified test pressure shall be applied by means of a pump connected to the pipe.

(b) The pump, pipe connection, pressure gauges, and all necessary apparatus except the gauges, shall be provided by the Contractor.

(c) Prior to applying the specified test pressure, all air shall be expelled from the pipe.

(i) If permanent air vents are not located at all high points, the Contractor shall install corporation cocks at such points so the air can be expelled as the line is filled with water.

(d) After all the air is expelled, the corporation cocks shall be closed and the test pressure applied.

f. Minimum test duration is two (2) hours.

g. Where leaks are visible at exposed joints and/or evident on the surface where joints are covered, the Contractor shall repair the joints, retighten the bolts, relay the pipe, or replace the pipe until the leak is eliminated, regardless of total leakage as shown by the hydrostatic test.

h. Polyethylene encasement damaged from repairs must also be properly repaired or replaced to the satisfaction of the Town.

i. All pipe, fittings, and other materials found to be defective under test shall be removed and replaced at the Contractor's expense.

j. Lines that fail to meet test requirements shall be repaired and retested, as necessary, until test requirements are met.

k. The Contractor shall not operate any valves on existing water mains. This shall be done by the Town.

l. No pipe installation will be accepted if the leakage is greater than that determined by the formula and table included in *Section 300 – Water Distribution System Specifications, Part VI – Inspection and Testing, Item A.5 – Leakage.*

E. Manhole Water Exfiltration Testing

1. All new manholes shall be hydraulically tested. Labor, equipment, and supplies required for the test shall be furnished by the Contractor.

2. Manholes shall be tested after installation with all connections in place.

   a. Lift holes, if any, shall be plugged with an approved, non-shrinkable grout prior to testing.

   b. Drop connections (if approved) shall be installed prior to testing.

   c. The water exfiltration test shall include testing of the seal between the cast iron frame and the concrete cone, slab, or grade rings.

   d. The manholes shall be backfilled and finished to design grade prior to testing.

   e. If a coating or lining is to be applied to the interior of the manhole, the water exfiltration test shall not be performed until the coating or lining has cured according to the manufacturer's recommendations.

3. Procedure

   a. The maximum leakage allowance for all manholes shall be 0.025 gallons per foot diameter per foot of depth, and maintained for at least one (1) hour.

   b. The inlet and outlet of the manhole being tested shall be sealed with watertight plugs or bulkheads, and the manhole shall be filled with water until the elevation of the water is above the interface of the concrete and the casting.

   c. The test level shall be clearly marked in the manhole.

   d. The manhole shall be filled and maintained full of water for a period of at least twenty-four (24) hours prior to the start of the test.

   e. If the water level in the manhole drops during this twenty-four (24) hour period, the level shall be raised to the test level mark prior to start of the test.

   f. All vent holes in the lid shall be plugged and the lid shall be installed prior to start of the test.

g. The test shall last a minimum of one (1) hour. Once the test begins, the manhole lid shall only be removed in the presence of the Town or Town's representative.

h. Exfiltration shall be determined by measuring the amount of water required to raise the water level back to the marked level at the end of the test period.

i. The manhole shall be considered to pass the water exfiltration test if the measured exfiltration is less than or equal to the allowable leakage specified in *Item E.3.a – Procedure*, above.

4. If a manhole fails the water exfiltration test, the manhole shall be repaired with a non- shrinkable grout or other material approved by the Town. The water exfiltration test shall then be repeated until a satisfactory test is obtained.

5. All observed leaks shall be corrected even if exfiltration is within the allowable limits.

6. All temporary plugs shall be removed after each test.

F. Deflection Testing

1. All new sanitary sewer lines shall be deflection tested.

2. Maximum deflection for pipe joints shall be limited to eighty percent (80%) of the deflection recommended by the manufacturer.

G. Televising

1. On contracts that involve the construction of new sanitary sewer mains (manhole-to-manhole), the replacement of sanitary sewer main pipe with new sewer pipe (manhole-to-manhole), or for projects where subsequent heavy grade compaction is performed after the laying of sanitary sewer mains, the Contractor shall provide a digital video inspection of the interior of the constructed sewer main.

2. The video shall include a progressive video recording of the main section using standard pipeline video equipment.

3. The equipment used to video-document the interior of the main shall either be equipped with an inclinometer indicator that portrays the slope of the main on the video recording, or the video shall be recorded with partial flow in the main (or with a fully wetted invert)

such that an assessment can be made of the trueness of grade (workmanship).

4. The video shall clearly depict all pipe joint sections and service taps along the entire length of pipe in a continuous recording sequence with included linear distance measurements to each service.

5. An inspection report shall be provided to the Wastewater Division with digital videos (CD or USB format) for review and approval. Report shall include:

    a. Length of pipe between manholes

    b. Pipe material and diameter

    c. Slope of pipe

    d. Distance from starting manhole to service laterals

6. The Town shall have fourteen (14) working days after receiving the video inspection and report to review and approve.

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Application
and
Excavation/Cutting Permit

Town of Crested Butte
PO Box 39
507 Maroon Ave
Crested Butte, Co 81224
(970) 349-5338
Fax (970) 349-6626

LEGAL DESCRIPTION:

Lot Numbers: _____

Block: _____

Application #:	Date:

◯ Major Installation ◯ Minor Installation

Applicant	Mailing Address	Phone
Job Street Address	Mailing Address	Phone
Property Owner	Mailing Address	Phone
Contractor	Mailing Address	Phone
Engineer/Architect	Mailing Address	Phone
Other Parties Involved (Insurance Co.)	Mailing Address	Phone
Other Parties Involved (Bond Co.)	Mailing Address	Phone
◯ New Construction	◯ Alteration	◯ Repair
Valuation of Project (estimated cost)	Cash or Check Bond Required as determined by Public Works	

Fee	Amount		Date
Permit			
Minor $35.00			
Major $70.00			
Franchise $0.00			
Total Amt.			

Start Date — Est. Completion Date

Description of Work or Repair. Provide sketch for minor installation.
Attach construction plans and specifications for major installation.

Wastewater Division informed of sewer tap/connection on (date): _____

Water Division informed of water tap/connection on (date): _____

Final connection of water and sewer taps to be coordinated with respective Division manager by the permittee during construction.

This Excavation Permit shall become null and void if construction is not commenced within 60 days of the date of issuance. The Excavation Permit shall expire on the 1st of October after the date of issuance and all construction must be completed prior to the expiration of the permit. Deposits will not be carried over into the next calendar year. Any deposits not requested by year end will be forfeited.

I hereby certify that I have read and examined this application and set of instructions and that all information in this application is true and correct. All provisions of the Town of Crested Butte Public Works criteria for design and construction will be complied with whether specified herein or not. The granting of a permit does not presume to give authority to violate or cancel provisions of any other state or local law regulating construction or the performance of construction. Further, I understand that the violation of any of the provisions previously set forth shall be deemed a misdemeanor and upon conviction of any such violation I shall be punishable by a fine of not more than $1000, or, by imprisonment for not more than 90 days, or, by such fine and imprisonment for each and every day that violation is committed, continued or permitted.

_____

Signature of contractor/authorized agent *date*

_____

Signature of owner *date*

APPENDIX D

CRESTED BUTTE FIRE PROTECTION DISTRICT
NEW EMERGENCY SERVICES CAMPUS

CR 317 and Slate River, Gunnison County, CO (North Crested Butte)

Schematic Design Package 01 – Central Administration, Fire, and Emergency Services (HQ)

REVISION LOG

Revision 1
6/14/2023

Crested Butte Fire Protection District
New Emergency Center Campus

CR 317 and Slate River, Gunnison County, CO (North Crested Butte)

FINAL Schematic Design Package 02
Search and Rescue (SAR)

Project No. 22033_3

14 June 2023

Revision No.	Date	Description
0	February 08, 2023	Original Submittal, No highlight
1	June 14, 2023	Misc. changes highlighted in yellow

BG+co.
Architecture
Interior Design
Project Management

622 Rood Avenue
Grand Junction, CO 81501
970-242-1058 office

BLYTHE GROUP + co.

TCA
ARCHITECTURE + PLANNING + DESIGN

Table of Contents

1. Project Description

The Crested Butte Fire Protection District (CBFPD) intends to develop a new emergency services campus on property located in Gunnison County north of the Town of Crested Butte. The new campus will include a potential total of 2 buildings which will be permitted separately and therefore are separated into their own reports. This report (Final Schematic Design Package) covers the Search and Rescue (SAR) building on the new campus. The SAR structure is to be constructed using metal building components. Site work for this building is included in the administration building's narrative.

The new Search and Rescue (SAR) building will house the equipment and functions required by SAR services including but not limited to the following:

- SAR Administration – Offices and space for day-to-day operations and mission preparation/planning.
- Equipment Bays and Related Support Spaces – A 4-bay open space for vehicle storage and upkeep with ancillary support spaces such as a locker room and small storage.
- Training – Multi-use space and support areas that can be used as a classroom or other functions that may be required. This section of the building is secured from the remainder of the building so the space can be offered to the public.

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The overall campus site is made up of two (2) parcels. The SAR sits on the southeast end of the new campus southeast of the proposed CBFPD headquarters building. Site design permits the equipment bays to have drive-thru access from the front and the back.

This building and the overall campus work will be constructed using a single Construction Manager/ General Contractor (CM/GC) method of delivery. The process of selecting a qualified CM/GC is complete and FCI Constructors, Inc. has been selected, awarded, and is currently part of the project. The CM/GC will play an integral role working with the design team to help achieve the project goals.

The SAR building includes a roof mounted 21 kW photovoltaic system.

It is anticipated the SAR building will be constructed concurrently with the other structures on campus.

Zoning information

Reference Final Schematic Design Package 01 Central Administration, Fire, and Emergency Medical Services (EMS)

Exclusions

This report and therefore the project scope does not currently contain any of the following items. If added to the project it is anticipated they, or any other scope modifications would result in additional fees and potential re-design of work already performed.

1) Zero Energy – The scope of this project does not include any provision for any building(s) to be zero energy or zero carbon. Nor does it include any energy analyses, simulations, enclosure testing, or mockups. If any of these items or similar items are added to the scope of the project, project fees, construction costs, and project timeline would need to be re-evaluated before moving forward.
2) LEED: No aspect of the project will pursue LEED Certification at any level.

LEED Certified

The SAR building will not be 'LEED Certified'.

2. Project Schedule

Phase	Completion
FINAL Schematic Design and Cost Estimate:	June 21, 2023
CBFPD BOD-SD Approval Meeting:	July 11, 2023
Final Design Development and Cost Estimate:	October 9, 2023
CBFPD BOD-DD Approval Meeting:	October 10, 2023
BG+co Final Contract Documents to FCI for pricing:	July 25, 2023
Final Contract Documents and GMP:	September 05
CBFPD BOD-CD Approval Meeting:	January 30, 2024
Begin Construction Phase:	March 19, 2023
Mobilization:	April 12, 2024
Substantial Completion:	July 7, 2025

3. Preliminary Code Analysis

Governing Building Codes: Crested Butte Municipal Code
2021 IBC, IMC, IFGC
2021 IPC
2021 NEC
2017 ICC/ANSI 117.1
2021 IECC

Chapter 3 Use and Occupancy Classification:

IBC Section 508. The proposed use is classified as a Mixed Use – Non-Separated occupancy of Assembly A-3, Business Group B and Storage (S-1 and S-2).

Chapter 4 Special Detailed Requirements Based on Use and Occupancy:

N/A

Chapter 5 General Building Heights and Areas:

The building can have 2 stories per Table 504.4 using the stricter requirement for Occupancy 'S-1' and have a maximum height of 60 feet by Table 504.3. The maximum allowable area after consideration of the Type VB construction, being fully fire sprinklered, and its location on the property is 27,000 SF for the two floors of the entire building. Since the building area is less than the requirement, no area increase by frontage calculations are needed. In each story, the building area shall be such that the sum of the ratios of the actual building area of each separated occupancy divided by the allowable building area of each separated occupancy shall not exceed 1.

Chapter 6 Types of Construction:

This building will be of the type of construction described in IBC Section 602.2 for Type VB. In this type of construction structural elements, exterior walls, and interior walls are of any materials permitted by the IBC code. IBC Table 601 requires (0) fire-resistance ratings for building elements in a Type VB construction. IBC Table 602 requires (0) fire-ratings for exterior walls of B, S-1, or S-2 occupancy groups with fire separation distances equal to or exceeding 10 feet. If this distance is between 5 and 10 it will need to have a 1 hr rating and if this distance is less than 5 feet, it will need a 1 hr rating for occupancy groups B, and S-2 and a 2 hr rating for occupancy group S-1.

Chapter 7 Fire and Smoke Prevention Features:

Exterior walls shall comply with Section 705. Section 705.2 requires that cornices, eave overhangs, exterior balconies and similar projections conform to minimum projection distances specified by Table 705.2. Buildings on the same lot must comply with requirements set forth in Section 705.3. Section 705.8.1 requires that the maximum area of unprotected and protected openings permitted in an exterior wall in any story of a building shall not exceed the percentages specified in Table 705.8. Section 705.11 requires that parapets be provided on exterior walls of buildings except if the wall is not required to be fire-resistance rated according to Table 602 because of fire separation distance. Section 705.11.1 requires that parapets have the same fire-resistance rating as that required for the supporting wall.

Chapter 8 Interior Finishes:

IBC Table 803.13 requires other wall and ceiling finishes to be Class B in interior exit stairways and Class C in all other rooms and spaces.

Chapter 9 Fire Protection Systems:

Fire Suppression is not required by code but is being installed at Owners preference.
Fire Extinguishers shall be installed in accordance with NFPA 10.

Neither Manual or Automatic Fire Alarm system is required as the projected Occupant loads are less than the triggers given in IBC Sections 907.2.2 and 907.2.7.
.

Chapter 10 Means of Egress:

2018 IBC Table 1004.5 sets the maximum floor area allowance per occupant for B and M occupancies. This table sets the total building occupant load as follows:

Floor	Square Footage	Occupancy Factor	Occupant Load
First–A-3 Occupancy	785 SF	15 net	52.3
First–B Occupancy	390 SF	150 gross	2.6
First–S-1 Occupancy	750 SF	300 gross	2.5
First–S-2 Occupancy	3,723 SF	200 gross	18.6
Total:	**5,649 SF**		**76**

IBC Table 1006.3.2 sets the minimum number of exits or access to exits with 1-500 occupants at 2 per story. The maximum exit access travel distance for a B occupancy in a fully sprinklered building is 300 feet and 250 feet for an M occupancy per IBC Table 1017.2. Maximum Common Path of Egress Distance 75 feet for M occupancy and 100 feet for Business occupancy spaces (Table 1006.2.1). Maximum occupant load of any of the space uses with one exit shall not exceed 49 (Table 1006.2.1). There is no fire-resistance rating required in sprinklered B or M occupancy groups for corridors per Table1020.1. The minimum corridor width is 44” per IBC Table 1020.2.

Chapter 11 Accessibility

IBC Section 1104 requires at least one accessible route be provided from accessible parking, accessible passenger loading zones, and public streets or sidewalks to an accessible entrance to the building. IBC Section 1105 requires that at least 60% of all public entrances be accessible. IBC Section 1104.4 requires at least one accessible route be provided to each level. IBC Section 1109.2 has requirements for toilet and bathing facilities to be accessible. IBC Section 1111 has requirements for accessible element signage.

Chapter 12 Interior Environment

IBC Section 1204 requires temperature control for all interior spaces intended for human occupancy to provide and maintain indoor temperatures of not less than 68°F (20°C) at a point 3 feet above the finish floor. Section 1205 has requirements for providing natural and artificial light. Section 1210 has requirements for toilet and bathroom finishes of walls, floors, and partitions to be smooth, hard and nonabsorbent materials.

Chapter 13 Energy Efficiency:

IBC Section 1301 requires buildings to be designed and constructed in accordance with the International Energy Conservation Code. The building will be constructed with manufactured metal building components. According to the 2021 IECC, the Town of Crested Butte is in Climate Zone 7.

Per Table C402.1.3.

Metal Building Roof: insulating value of R-30 plus R-11 Linear System values

Metal Building Above Grade Walls: insulating values of R-13 plus R-17 continuous insulation

Below Grade Walls: insulating value of R-15 continuous insulation

Unheated Slabs: insulating value of R-20 for 24 inches below

Heated Slabs: insulating values of R-20 for 48 inches below plus R-5 full slab insulation

The building envelope will be examined overall using ComCheck software to ensure compliance with the IECC requirements.

Chapter 29 Plumbing Systems:

Per sections 508 and 2902.1 the total plumbing fixtures of a non-separated mixed-use building are determined by totaling the individual required number of plumbing fixtures required for each occupancy classification

Occupancy	Number of Occupants	Water Closets	Lavatory	Service Sink	Drinking Fountain
		M / W	M / W		
A-3	52.3	0.2 / 0.4	0.13 / 0.13	1	0.1
B	2.6	0.05 / 0.05	0.03 / 0.03	1	0.026
S-1	2.5	0.025 / 0.025	0.025 / 0.025	1	0.0025
S-2	18.6	0.093 / 0.093	0.093 / 0.093	1	0.0186
Sub Total:		**0.68 / 0.568**	**0.53 /0.53**	**1**	**0.1471**
Total:	**76**	**1 / 1**	**1 / 1**	**1**	**1**

Chapter 30 Conveying Systems:

No elevator is required.

4. Civil Concept

Reference Final Schematic Design Package 01 Central Administration, Fire, and Emergency Medical Services (EMS)

END OF CIVIL NARRATIVE

5. Landscaping and Irrigation Concept

Reference Final Schematic Design Package 01 Central Administration, Fire, and Emergency Medical Services (EMS)

END OF LANDSCAPING AND IRRIGATION NARRATIVE

6. Exterior Architectural Concept

The new Search and Rescue (SAR) building exterior core and shell are to be a pre-engineered metal building. Standard metal building components and assemblies are to be use throughout the majority of the structure. To prolong the lifecycle and performance of the core and shell certain metal building components are to be substituted.

Exterior doors and windows:
Thermally broken, aluminum framed openings to be use. Glazing is to be double paned. All doors are to be insulated.

Fenestration Framing:
Perimeter of all openings to be framed with steel channels / girts. No fenestration is to be attached only to the metal building panels.

Exterior metal trim / flashing:
Custom trim and flashing to be used to create durable, weather tight construction.

Exterior metal panels:
Use standard metal panels with colors and profiles from the metal building manufactures. Orientation of the metal panels are to be horizontal and vertical. An accent metal panel is to be used as a wainscot with capped metal trim. All metal panel edges are to be capped with a prefinished metal j trim.

Thermal and Moisture Protection:
A premanufactured vapor retarder and insulation system (Simple Saver System) is to be used in the walls and roof. Thermal spacers are to be used between all metal building girts and prefinished metal panels. No continuous exterior insulation is to be used on the wall and roof assemblies.

7. Interior Architectural Concept

The interior architectural concept is to provide SAR personnel with sufficient space to service the area. The interior design of this building is divided into two basic parts:

1) **Vehicle Bays** –This area contains the SAR equipment storage areas of the facility including four (4) interior bays for vehicular storage and support areas. Ancillary spaces are provided for storage of smaller equipment. Lockers for SAR personnel are located withing the vehicle bays. The interior architecture of this area will be functional and durable. Typical wall construction of the support spaces will be metal stud with gypsum wall board. Painted plywood veneer will be used in the vehicle bays where the potential for water and impact will be high. Ceilings will be open and exposed to structure.

2) **SAR Operations Area** –This space provides functions needed by the SAR personnel between and during missions including a training and mission planning area for the entire building. The training area is to include casework with a sink, microwave, electric stove / range, and refrigerator. The interior architecture of this area will be functional, and durable as well. Typical wall construction will be metal stud with sound insulation and gypsum wall board finish. Floor finish will be durable.

Preliminary Finish Schedule:

AREA	FLOOR	WALLS	CEILINGS
Public Entry	Sealed concrete	Painted Gypsum	Gyp Bd. w/ Acoustical lay-in tile
Training Room	Durable Carpet	Painted gypsum	Gyp Bd. w/ Acoustical lay-in tile
Public Restrooms	Porcelain tile	Porcelain tile wainscot up to 7'-0", epoxy painted gypsum wallboard	Gypsum board
Vehicle Bays	Sealed concrete	Exposed metal building, painted 3/4" plywood wainscot up to 8 feet	Open to Structure
Bay accessory spaces	Sealed Concrete	Tnemec Painted Gypsum	Open to Structure
Mission Planning	Durable Carpet	Painted gypsum	Acoustical lay-in tile
Elec/Mech/Plbg	Sealed concrete	Painted impact-resistant gypsum	Open to Structure

END OF ARCHITECTURAL NARRATIVE

8. Structural Concept

GENERAL BUILDING DESCRIPTION

The Crested Butte Fire Protection District – Search and Rescue (SAR) building is a new 1-story building, located at 306 Maroon Avenue, Crested Butte, Colorado.

The ground floor of the building will serve as offices, training, light storage, and vehicle bays. A portion of the building will remain un-finished in the initial phase of the project.

This narrative describes the projected structural foundation, floor, roof, lateral and exterior wall systems for the project and discusses the proposed structural design criteria.

DESIGN CRITERIA

- The governing Building Code is the IBC 2021 and referenced codes.

- Design Dead Loads will include:
  - Structure self-weight
  - Allowance for flooring, C/L/M/E (ceiling, lights, mechanical piping and ducts, and electrical) 15psf min
  - Allowance for direct mounted future photovoltaic panels on all roofs

- Design Live Loads will include:
  - Design Live Loads will be in accordance with the requirements of IBC
  - Office space: 50psf + 15psf for partitions
  - Vehicle Bays: 40psf, concentrated load of vehicle

- This building is classified as Risk Category IV.

- Serviceability:
  - Live Load deflection = L/360
  - Total Load deflection (including creep) = L/240
  - Design floor for ATC Design Guide 1 “Minimizing Floor Vibration”
    - Maximum acceleration = 0.5% g
    - Assumed damping = 3%
  - Wall deflection = L/240
  - Building Drift = H/400 (wind), H/50 (seismic)

- Seismic loading in accordance with IBC and ASCE using the following parameters:
  - Soil Site Class, Per Geotechnical Report: D
  - Response Modification Coefficient (R): 3.0
  - Short Period Spectral Acceleration (Ss): 36.4%g
  - One-Second Period Spectral Acceleration (S1): 8.2%g
  - Seismic Design Category: D
  - Mass calculations will conform to ASCE 7

- Wind loading in accordance with ASCE using the following parameters:
  - Basic ultimate wind speed = 120 mph
  - Exposure category C

- Snow loading in accordance with ASCE 7 using the following parameters:
  - Ground Snow Load, Pg: 125 psf
  - Thermal factor, Ct: 1.0
  - Snow Exposure factor, Ce: 1.0
  - Importance Factor, Is: 1.2
  - Flat Roof Snow Load, Pf: 105 psf

- Frost protection to be not less than 36”.

- Foundations will be designed in accordance with the Cesare, Inc geotechnical engineering study number 22.2156, dated December 15, 2022. Foundation system options are summarized in the Foundation section below.

BUILDING FRAMING

The Search and Rescue building will be a pre-engineered metal building with two slope shed roofs over the four (4) vehicle bays and auxiliary spaces.

FIRST FLOOR FRAMING

The first-floor slab is expected to be a conventional slab-on-grade reinforced with welded wire reinforcement. For preliminary pricing, the following can be assumed:

- Concrete for slab-on-grade:
  - F’c = 4,500 psi, normal weight
  - No entrained air

- Slab-on-grade:
  - 4” thick slab with 6” thick slab at vehicle bays

- Thickened slabs up to 12” thick at stair stringers, and in mechanical areas

Detailed information is provided below:

Slab-On-Grade	4" Normal Weight with Fiber Mesh	
Slab Reinforcing	6x6 W2.9xW2.9 Slab Reinforcing	0.5 psf
Slab-On-Grade – Vehicle Bays	6" Normal Weight with Fiber Mesh	
Slab Reinforcing – Vehicle Bays	#4 @18” oc	1.5 psf
Prepared subgrade per recommendations of the Geotechnical Engineer		

FOUNDATIONS

The expected foundation system is a shallow spread footing foundation system. During the excavation for the geotechnical report ground water was not found. For preliminary pricing, the following can be assumed:

- Concrete for footings and stem walls:
  - F’c = 3,000 psi, normal weight
  - 6% air-entrainment in stem walls

- Foundations:
  - The allowable bearing pressure is 3,500psf based on dead load plus ½ live load.

Detailed information for each option is provided below:

Typical Exterior Footing and Stem Wall	8” Thick Stem Wall with #4 @ 12” Each Way, Each Face On 16” Wide x 12” Thick Strip Footing with #5 @ 12” If brick or full thickness stone is to be supported on stem wall assume 14” Thick Stem Wall w/ #5 @ 18” Each Way, Each Face on 22” Wide x 12” Thick Strip Footing with #5 @ 12”
Typical Interior Footing	8’x8’x1’-6” Normal Weight Concrete with (7) #6 Each Way, Bottom
Typical Exterior Footing	6’x6’x1’-4” Normal Weight Concrete with (8) #5 Each Way, Bottom
Typical Braced Frame Footing	6’x6’x1’-4” Normal Weight Concrete with (8) #5 Each Way, Top and Bottom

LATERAL SYSTEM

The lateral system for the building will be by pre-engineering metal building manufacturer is a series of metal moment frames in the east/west direction and rod x-braced frames in the north/south direction.

EXTERIOR WALL

The exterior walls will be comprised of 8” deep horizontal metal Z-girts which will be performance specified by Martin/Martin, Inc. to be designed by the pre-engineered metal building manufacturer.

END OF STRUCTURAL NARRATIVE

9. Mechanical, Plumbing and Electrical Concepts

Bighorn Consulting Engineers, Inc.
386 Indian Road, Grand Junction, CO 81501
Phone: 970-241-8709

Crested Butte Fire Protection District
New Search and Rescue Building
Crested Butte, CO

Mechanical, Plumbing and Electrical Schematic Design Narrative
June 14, 2023

General

The project will include the construction of a search and rescue building with apparatus bays, training, offices, locker rooms and ancillary spaces. This will be a single-story building of about 5947 ft2.

Applicable Codes

2021 International Building Code
2021 International Mechanical Code
2021 International Plumbing Code
2021 International Energy Conservation Code
2020 National Electric Code

Seismic Classification

The project classification is Site Class D, Risk Category IV, and Seismic Design Category D. For this facility, the Component Importance Factor would be 1.5.

The following systems/components will be installed with seismic bracing:

1. Fire protection piping.
2. Electrical conduit larger than 2".
3. Ductwork with a cross-sectional area greater than six square feet.
4. Domestic, sanitary, storm, or hydronic piping that does not meet the 12-inch hangar rule. Piping 1" or less and supported by a single clevis does not require bracing. Piping 1" or less supported by a trapeze per ASCE 7 does not require bracing.
5. In-line components greater than 75 lbs.
6. Light fixtures in suspended ceilings.

This will be a delegated design for MEP systems performed by a firm specializing in seismic classification and design of restraints for MEP systems and equipment.

Plumbing

It is anticipated that a new fire protection line would be routed to the building to provide fire protection water and a new domestic water line would be routed to the building for domestic water as follows:

1. SAR: 6” fire line, 1 1/4” domestic line.

The domestic water entry will include a strainer, PRV’s, reduced pressure backflow preventer and pressure gauges.

A sanitary sewer line will exit the building and tie to the sanitary main on site as follows:
1. SAR: 4” line.

Coordination with the civil engineering consultant will be necessary to determine final location of the sewer tap for the building.

Natural gas will be routed in the building to serve gas-fired equipment including water heaters, boilers, and other mechanical gas-fired equipment for the building. The meter set location will be coordinated during design. Delivery pressure (2 psi or 7” wc) will also be determined during design. The gas needed in the new system will vary with the selection of the mechanical system. Exterior, underground gas piping will be HDPE with fusion welded joints. Interior gas piping will be schedule 40 steel piping. Gas pipe size up to 3” is anticipated.

The SAR building will have a domestic hot water plant that is fed from the heating boiler plant to indirect water heaters as follows:
1. SAR: one, 80-gallon, indirect heater.

The water heater will be fed from the boiler system and domestic hot water will be routed from this location to all fixtures requiring domestic hot water. Recirculation lines will be routed from the furthest fixtures as required by the IPC.

Exterior hose bibbs will be provided at select locations around the exterior of the buildings.

Plumbing fixtures will be standard grade, commercial quality. The water closets will be high efficiency 1.1 gpf, floor-mounted water closets by Kohler. Urinals will be 0.125 gpf high efficiency style by Kohler. Flush valves will be sensor type with battery power. Lavatory faucets in public restrooms, private restrooms, and handwash sinks in the bays will be 0.3 gpm sensor type with battery power.

Waste, vent, and storm piping inside the building will be standard weight cast iron pipe with “No-hub” joints. Underground waste will be DWV rated PVC with solid wall. Domestic water and recirculation piping will be type “L” copper. Domestic hot water will be insulated with 1” fiberglass insulation according to IECC 2015.

Floor drainage will be provided in select areas as determined during design. The drain locations and type will be coordinated with the architect and owner during design. These will include large toilet rooms, locker rooms, and apparatus bays.

Specific plumbing items for the SAR apparatus bays include:

1. A 1500 gallon, two-compartment sand/oil interceptor will be installed outside the building and the location will be coordinated during design. Floor drainage from the bays will drain to this interceptor.

Heating, ventilating, and air-conditioning

Search and Rescue (SAR) Building

The systems for the SAR building will be composed of the following:

1. A central boiler plant with two, modular, high-efficiency, gas-fired boilers; pumps; indirect water heaters; piping; and controls. The boilers will each have a capacity of 400 mbh and be similar to the Raypak XFIIRE, Model #B400.
2. Radiant floor will be installed throughout this building and will include 1/2" hePEX at 10" o.c. Other system components will include radiant manifolds, control valves and loop piping. Loops will be limited to 300 feet in length.
3. Hydronic fan coils will be supplied to provide supplementary heat in the offices, training, and meeting planning spaces.
4. Hydronic unit heaters will provide supplementary heat at the apparatus bay doors.
5. Snowmelt systems will be installed at the aprons at each overhead door and will extend 15 ft from the door. Systems will include 3/4" hePEX tubing at 12" o.c. Other system components will include snowmelt manifolds, control valves and loop piping. Loops will be limited to 500 feet in length. System fluid will be 50% propylene glycol. The areas of the apron that are included in the city easement will be served by a separate manifold system to maintain independent operation from the other parts of the aprons.
6. General exhaust fans will be used to provide ventilation throughout and to ensure negative pressure relation to the Administration side of the building. There will be a wall mounted exhaust fan in the equipment bay. Final location of fan to be determined during design. The fan will provide 0.75 cfm/ft2 of exhaust capacity. The general exhaust system will be provided with a carbon monoxide and nitrogen dioxide gas detection system similar to the Macurco DVP-1200 with sensors.
7. Suspended air cleaners will be used in the equipment bay to clean and filter the bay air. A house reel, source capture vehicle exhaust system will also be provided.
8. Apparatus vehicle source capture exhaust system will be provided for each vehicle. This will be a system composed of exhaust fans, ductwork, track system and breakaway connections.
9. An exhaust recovery ventilator (ERV) will be used to provide code required outside air ventilation and general exhaust in the Administration part of the building.
10. The IT room will receive a 1.0-ton cooling only split system air conditioner with low ambient cooling.

Geothermal Considerations

The gas fired boiler plant could be replaced with a geothermal water-to-water (WTW) heat pump plant to provide the required hydronic hot water. The WTW heat pump plant would be comprised of (2) Water Furnace TruClimate 100 model NXW600 units each with a nominal 50-ton capacity. The source side would be sized for approximately 300 GPM of total flow.

The water-to-water plant would be connected to the site geothermal bore field loop.

Electrical:

Site/Overall

Site lighting will be provided using full cutoff fixtures that are Dark Sky Compliant. Arrangement of building mounted lights and Site poles or bollards shall be such that light does not trespass over the property boundaries in accordance with IECC 2021 requirements. The need for additional Site task lighting to assist

with operations or training scenarios will be coordinated during the design. Site lighting layout will take into consideration the planned Helicopter Landing Zone and flight path, including pole height, placement, and light source visibility.
Provide two (2) conduits running between buildings. One is to be for Fire alarm (low voltage) and one for future use. Size of conduits to be determined during design.

Lighting

The lighting system for the project will include the most energy efficient lighting available with consideration from a maintenance standpoint to provide the most compatible light fixtures. Vehicle bays are planned to have LED low-bay lighting that is coordinated with the equipment and vehicle layout to provide the most effective coverage. Other areas are planned to use LED panels, downlights, and pendants for functional performance based on ceiling types.

Automatic lighting controls will be provided where required or practical to turn lights on when occupants enter an area and off after a period of inactivity. Automatic daylight harvesting controls shall be provided where required by the governing IECC. All the fixtures will have dimming capabilities in conjunction with the LED light fixtures to provide IECC required light level reduction controls.

Exterior lighting will be controlled by a timeclock or photocell and provide the ability to reduce light output via fixture dimming.

General Power

The electrical service is planned to be a 200 amp, 277/480V, 3 phase. The final electrical service solution will depend on project approval and phasing of construction with further coordination during the design being required.

The entire electrical service to the Fire Station is planned to be backed up by a Cummins Turbo-diesel generator that is configured for continuous operation (i.e., COPS NEC 708) for a period of 72 hours minimum. Estimated size of backup generator is 350kW and provisions for a load shedding transfer switch to the SAR building shall be planned at minimum. Confirmation of generator capacity and alternate solutions for backup generator power will be discussed during the design and may include increased nominal size and load shedding or transfer switch configurations, add alternate option for independent backup generator for the SAR building (~65kW), etc. The electrical gear will have protection against overvoltage (SPD). The electrical system will be designed to handle the demands of a typical building of this usage with capability to handle power requirements for general office and training operation in addition to Emergency response and operations related to SAR. All electrical devices will be specification grade.

A remote sewage lift-station grinder pump is anticipated to be installed on the site to be used by all buildings (Fire Station and SAR). This pump will be powered from the generator backed electrical service from the Fire Station or SAR building depending on final location.

Building metering will be accomplished with a single meter located on the exterior of the building next to the main disconnect/panel. Submetering for building systems to meet Energy Code or Certification requirements will also be included; these systems may include lighting, heating, cooling, etc. It is planned to use products from eGauge to complete the submetering.

Photovoltaic generation system(s) are planned to be installed as part of the construction. The specific installation plan and restrictions/limitations will be coordinated during the design. Electric Utility Service provider (Gunnison County Electric Association (GCEA)) has limitations on the overall size (kW) of

interconnected generation as well as total energy production/offset (kWh) of these systems that must be reevaluated at the time of the design.

Systems

Data and A/V systems will be designed and specified according to the input from the owner. This will include data ports in all offices, training/planning rooms, etc. It will also include wireless access points (WAP's) at strategic areas of the building to provide access as well as a cellular repeater system. All Data and AV systems will be routed in Cat 6A cable. The pathways will consist of a star pattern with each data drop consisting of a cable from the IT room to the outlet. The central IT room and equipment may be located in the Fire Station.

Access control will be installed as directed by the owner. Wiring will be accomplished via Cat 6A cabling or per manufacturers recommendations. Exterior proximity devices with extended reach will be installed at selected doors and gates to allow entry.

Cameras will be installed around and inside the building as directed by the owner. Wiring will be done using Cat. 6A wire.

END OF MECHANICAL / PLUMBING / ELECTRICAL NARRATIVE

10. Fire Protection

Shaner Life Safety
PO Box 522, Salida, CO 81201
970.409.9082; DSHANER@SHANERLIFESAFETY.COM

Crested Butte Fire Protection District Search & Rescue (SAR)
Fire Protection/Fire Alarm Schematic Design Report
June 14, 2023

Prepared by: Deborah Shaner, P.E., Fire Protection Engineer

The Crested Butte Fire Protection District (CBFPD) Search & Rescue (SAR) building will be provided with fire alarm and fire protection systems in accordance with the following codes and standards:

- NFPA 72, National Fire Alarm & Signaling Code
- NFPA 13, Standard for the Installation of Sprinkler Systems
- NFPA 1142, Standard on Water Supplies for Suburban and Rural Firefighting
- Crested Butte Fire Protection District Amendments

The following outlines the design criteria for the Fire Protection, Fire Alarm and Emergency Responder Radio Coverage systems.

Fire Protection

Fire Sprinklers

The building will be fully sprinklered. The system will consist of a wet pipe sprinkler system in the Training & Planning areas of the building. A dry pipe zone is recommended for the Vehicle Bays. The use of a wet pipe system can be considered during the Design Development phase. A 4" sprinkler line is recommended to serve the SAR with the zone being served from the water supply and pump in the HQ. The system will be designed in accordance with NFPA 13 and consist of Light Hazard and Ordinary Hazard classifications.

The approximated system demand is:

Sprinkler System flow: 400 gpm
Hose Stream: included in the HQ design
Total: 400 gpm
Approximate pressure demand: 50 psi

Water Supply

Water supply for both firefighting use and fire sprinkler demand is required.

NFPA 1142 will provide the basis of design for the site firefighting water supply. Two sources are planned. The first is a working hydrant within 1000' of the project site. This hydrant will be tested and evaluated during Design Development. The second is a dry hydrant in the river. The location of this hydrant will be

coordinated with CBFPD. The site's target fire flow is 1000 gpm, the maximum required by NFPA 1142. This water supply will satisfy the hose stream demand from NFPA 13.

Fire sprinkler demand will be met using a single water supply for both HQ and SAR. A storage cistern of approximately 24,000 gallons will be buried near the HQ building. A room will be provided at the HQ building for a fire pump and sprinkler riser. Using a vertical turbine pump with a vault under the pump room, pressure for both the HQ and SAR sprinkler system will be provided. A zone will be provided for the SAR building. Note that sprinkler piping cannot be buried without access, so a pipe chase will be required between HQ and SAR to serve the SAR sprinkler zone. The pump will be powered in accordance with NFPA 20. Refer to Electrical and Civil for more information.

Fire Alarm

The SAR Building will be outfitted with a fire alarm system consisting of the following:

- Addressable fire alarm control panel (FACP)
- Occupant notification through horns and strobes in accordance with NFPA 72
- Smoke detector at the FACP
- Manual pull station at FACP
- Sprinkler system supervision through waterflow and tamper switches
- Weatherproof horn/strobe on the exterior of the building at 10' above finished grade at the fire department connection
- HVAC Interface for shutdown of fans over 2000 cfm
- LCD Annunciation in the HQ building.

The fire alarm systems for the two buildings on site (Headquarters and Search and Rescue) will be networked together for the purposes of annunciation and monitoring. The network will require a single conduit between the buildings with a fiber or cable connection between the two fire alarm control panels.

Emergency Responder Radio Coverage

This project requires Emergency Responder Radio Coverage (ERRC). Testing shall be completed after initial building construction to determine functionality of emergency responder radios. If testing fails, an ERRC system will be installed. This system shall meet the requirements outlined in Section 510 of the 2015 IFC and shall be tested in accordance with Crested Butte Fire Protection District requirements.

END OF FIRE PROTECTION NARRATIVE

11. Project Team

Owner:	**Crested Butte Fire Protection District (CBFPD)** Sean Caffrey, Chief Executive Officer & Commissioner 306 Maroon Ave. Crested Butte, CO 81224 970.349.5333
Architect of Record:	**BG+co.** Peter Icenogle, AIA 622 Rood Avenue Grand Junction, CO 81501 970-242-1058
Design Architect:	**TCA Architecture and Planning** Brian Harris 6211 Roosevelt Way, Northeast Seattle, Wa 98775 206.522.3830
Civil Engineering/Land Surveyor:	**SGM** Jerry Burgess 103 West Tomichi Ave, Suite A Gunnison, Co 81230 970.641.5355
Landscape Architecture:	**Sprout Studio, Inc.** Margaret Loperfido 523 Riverland Drive, Unit 3b / P.O. Box 4184 Crested Butte, Co 81224 970.349.8959
Structural Engineer:	**Martin / Martin** Sean Molloy 0101 Fawcett Road, Suite 260 Avon, Co 81620 970.445.2470
Mechanical and Electrical Engineering:	**Bighorn Consulting Engineers** Shawn Brill 386 Indian Road Grand Junction, CO 81501 970-241-8709

12. Architectural Program

Number	Name	Exist Program SF	Revised Program SF	Notes
~~101~~	~~LOBBY~~	197	74	vestibule only
102	RESTROOM	69	50	
~~103~~	~~RESTROOM~~	69	0	removed from program
104	TRAINING	1,252	772	
~~105~~	~~STOR.~~	73	0	removed from program
106	VEHICLE BAYS - 4	4,696	3,737	14' X 60' bays, snow melt apron at each door
~~106B~~	~~WASH ALCOVE~~	17	0	removed from program
107	TOOL STORAGE	107	95	Must be separate room
108	MISSION EQUIPMENT	172	154	Must be separate room
109	MECH / WATER	106	123	
~~110~~	~~BOOT & SKI STORAGE~~	96	0	removed from program
111	LOCKER ROOM (30 lockers)	474	104	On walls in vehicle bays
~~112~~	~~LAUNDRY~~	72	0	removed from program
113	SHOWER	88	98	include toilet and sink
114	MISSION PLANNING	616	380	
115	KITCHEN	124	0	Locate in Training
~~116~~	~~OFFICE~~	116	0	removed from program
~~117~~	~~OFFICE~~	101	0	removed from program
~~118~~	~~OFFICE~~	101	0	removed from program
118B	IT	33	0	Locate in Mission Planning
~~201~~	~~TRAINING AREA / MEZZ~~	592	0	removed from program
202	ELEC EQUIPMENT	166	0	locate in vehicle bays
	Subtotal First Floor		**5,587.00**	
	Grossing Factor (10%)		391.09	
	Building Total		**5,978.09**	

13. List of Drawings

Refer to Appendix A for the following drawing sheets from the Schematic Design Package:

G0-1 Title Sheet
G0-2 Conceptual Images
A1-1 Floor Plan
A1-2 Roof Plan
A2-1 Exterior Elevations
A4-1 Building Sections

14. Project Manual Table of Contents

DIVISION 06 - WOOD, PLASTICS, AND COMPOSITES

061000	Rough Carpentry
062000	Finish Carpentry

DIVISION 07 - THERMAL AND MOISTURE PROTECTION

071113	Bituminous Dampproofing
071900	Water Repellents
072100	Thermal Insulation
072500	Weather Barriers
07410	Preformed Standing Seam Metal Roofing
074213	Prefinished Metal Wall Panels
076200	Sheet Metal Flashing and Trim
077200	Roof Accessories
079200	Joint Sealants

DIVISION 08 - OPENINGS

081113	Hollow Metal Doors and Frames
081416	Flush Wood Doors
083100	Access Doors and Panels
083323	Overhead Coiling Doors
085113	Aluminum Windows
087100	Door Hardware
088000	Glazing

DIVISION 09 - FINISHES

090561	Common Work Results for Flooring Preparation
092116	Gypsum Board Assemblies
093000	Tiling
095100	Acoustical Ceilings
099113	Exterior Painting
099123	Interior Painting
099300	Staining and Transparent Finishing

DIVISION 10 - SPECIALTIES

101400	Signage
102800	Toilet, Bath, and Laundry Accessories
104400	Fire Protection Specialties

DIVISION 11 - EQUIPMENT

114000	Foodservice Equipment

DIVISION 12 - FURNISHINGS

122400	Window Shades - MechoShade Systems
123200	Manufactured Wood Casework
123600	Countertops

APPENDIX A

VICINITY MAP

TRUE NORTH

NEW EMERGENCY CENTER CAMPUS
CRESTED BUTTE FIRE PROTECTION DISTRICT
SEARCH AND RESCUE (SAR)

CR 317 AND SLATE RIVER, GUNNISON COUNTY, CO (NORTH CRESTED BUTTE)

BG+co. PROJECT # 22033_3

2/8/22033 90% SCHEMATIC DESIGN
6/14/2023 SCHEMATIC DESIGN

SCHEMATIC DESIGN
ARCHITECTURAL

PROJECT DESIGN TEAM

ARCHITECTURE / INTERIOR DESIGN:
BG+co.
Architecture
Interior Design
Project Management
BLYTHE GROUP + co.

TCA
ARCHITECTURE + PLANNING + DESIGN
6211 ROOSEVELT WAY NE
SEATTLE, WA 98115
(206) 522-3830

in association with:

CIVIL ENGINEERING:
SGM
103 W TOMICHI AVE, SUITE A
GUNNISON, CO 81230
(970) 641-5355

LANDSCAPE ARCHITECTURE:
sproutstudio
growing community + preserving resources
PO BOX 4184
CRESTED BUTTE, CO 81224
(970) 349-8959

STRUCTURAL ENGINEERING:
MARTIN/MARTIN
CONSULTING ENGINEERS
77 METCALF ROAD, SUITE 301
AVON, CO 81620
(970) 926-6007

MECHANICAL, PLUMBING AND ELECTRICAL ENGINEERING:
Bighorn Consulting Engineers, Inc.
Mechanical & Electrical Engineers
399 Indian Road
Grand Junction, CO 81501
Phone (970) 241-0700
151 W 11th Street #108-C
Durango, CO 81301
Phone (970) 403-7676

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CRESTED BUTTE FIRE PROTECTION DISTRICT
FIRE EMS EST. 1973

NEW EMERGENCY CENTER CAMPUS - CRESTED BUTTE FIRE PROTECTION DISTRICT - SEARCH AND RESCUE

CR 317 AND SLATE RIVER GUNNISON COUNTY, CO (NORTH CRESTED BUTTE)

TITLE SHEET

SCHEMATIC DESIGN

REVISIONS DATE:

DATE: 6/14/2023

PROJECT #: 22033_3

SHEET #:

G0-1

MATERIALS LEGEND

- EXISTING CONSTRUCTION
- ASPHALT PAVING (SECTION)
- EARTH (PLAN & SECTION)
- GRANULAR FILL (SECTION)
- STRUCTURAL FILL (SECTION)
- SAND (SECTION)
- CONCRETE (PLAN & SECTION)
- BRICK VENEER (SECTION)
- CONCRETE MASONRY UNITS (CMU) (PLAN & SECTION)
- PRECAST CONCRETE (SECTION)
- MORTAR NET (SECTION)
- STEEL (SECTION)
- WOOD BLOCKING (CONTINUOUS) (SECTION)
- WOOD BLOCKING (INTERMITTENT) (SECTION)
- WOOD SHEATHING
- WOOD (FINISH) (SECTION & ELEVATION)
- INSULATION (FIBROUS) (PLAN & SECTION)
- INSULATION (RIGID) (PLAN & SECTION)
- STUCCO (SECTION)
- STUCCO (ELEVATION)
- GYPSUM WALL BOARD (GWB) (REFLECTED CEILING PLAN)

NOTE: SOME MATERIALS SHOWN MAY NOT BE USED ON THIS PROJECT.

SYMBOLS LEGEND

- ROOM TAG — ROOM NAME / A202A
- DOOR TAG — D220A
- ASSEMBLY TAG — 27
- NEW COLUMN GRID LINE — 0
- EXISTING COLUMN GRIDLINE — 0
- KEY NOTE — ?
- WINDOW / FRAME TYPE — #
- DRAWING REFERENCE — 1 / A1-1 — VIEW NAME — 1/8" = 1'-0"
- BUILDING SECTION INDICATOR — ELEVATION OR DETAIL NUMBER / 00 / A0-00 / SHEET THAT DETAIL IS ON — SIM — POINTS IN DIRECTION OF DETAIL
- WALL SECTION INDICATOR — ELEVATION OR DETAIL NUMBER / 00 / A0-00 / SHEET THAT DETAIL IS ON — SIM — POINTS IN DIRECTION OF DETAIL
- SIGN TAG — ID / Type
- ELEVATION INDICATOR — Name / Elevation
- DIMENSION LINES — 1"
- NEW CONTOUR — ####
- EXISTING CONTOUR — ####
- HIDDEN LINE
- OVERHEAD OBJECT
- CENTER LINE
- MATCH LINE
- LIMITS OF CONSTRUCTION
- DEMOLISHED ITEMS

ABBREVIATIONS

ADD-X	ADDENDUM NO. X
AFF	ABOVE FINISH FLOOR
AHU	AIR HANDLING UNIT
AL	ALUMINUM
ALT	ALTERNATE
ALT-X	ALTERNATE NO. X
AM	ACOUSTIC MATERIAL
AM-X	ACOUSTIC MATERIAL TYPE X
ARCH	ARCHITECT / ARCHITECTURAL
ATTEN	ATTENUATION
AVE	AVENUE
AVG	AVERAGE
BD	BUILDING
B.O.	BOTTOM OF
BIT	BITUMINOUS
BLDG	BUILDING
BLKG	BLOCKING
C/L	CENTER LINE
CEM	CEMENT / CEMENTITIOUS
CJ	CONTROL JOINT
CLG	CEILING
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT(S)
CONC	CONCRETE
CONT	CONTINUOUS
CPT	CARPET
CT	CERAMIC TILE
CTR	CENTER
D	DEEP / DEPTH
DBL	DOUBLE
DEMO	DEMOLISH / DEMOLITION
DEPT	DEPARTMENT
DF	DRINKING FOUNTAIN
DIA / Ø	DIAMETER
DIM(S)	DIMENSION(S)
DN	DOWN
DTL	DETAIL
DW	DISHWASHER
DWG	DRAWING
EA	EACH
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC	ELECTRICAL
EQ	EQUAL
EQUIP	EQUIPMENT
EWC	ELECTRIC WATER COOLER
EXIST	EXISTING
EXT	EXTERIOR
F.O.	FACE OF
FAAB	FLUID APPLIED AIR BARRIER
FAAP	FIRE ALARM ANNUNCIATOR PANEL
FACP	FIRE ALARM CONTROL PANEL
FBO	FURNISHED BY OWNER
FD	FLOOR DRAIN
FDN	FOUNDATION
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER CABINET
FF	FINISHED FLOOR
FFIN	FACTORY FINISH
FRP	FIBERGLASS REINFORCED PLASTIC
FTG	FOOTING
FURN	FURNISHING / FURNITURE
GA	GAGE
GALV	GALVANIZED
GL	GLAZING
GL-X	GLAZING TYPE X
GWB	GYPSUM WALL BOARD
H	HIGH / HEIGHT
HC	HANDICAPPED
HDW	HARDWARE
HDWD	HARDWOOD
HM	HOLLOW METAL
HORIZ	HORIZONTAL
HVAC	HEATING VENTILATING & AIR CONDITIONING
IBC	INTERNATIONAL BUILDING CODE
ID	INSIDE DIAMETER
INCL	INCLUDED
INSUL	INSULATION
INT	INTERIOR
JT	JOINT
L	LONG / LENGTH
LAV	LAVATORY
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
MAS	MASONRY
MATL	MATERIAL
MAX	MAXIMUM
MECH	MECHANICAL
MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
MO	MASONRY OPENING
MTD	MOUNTED
MTL	METAL
NA	NOT APPLICABLE
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NIC	NOT IN CONTRACT
NO.	NUMBER
NRC	NOISE REDUCTION COEFFICIENT
NTS	NOT TO SCALE
OC	ON CENTER
OD	OUTSIDE DIAMETER
OPNG	OPENING
OPP	OPPOSITE
PERF	PERFORATED
PLAM	PLASTIC LAMINATE
PLBG	PLUMBING
PLYWD	PLYWOOD
PNT	PAINT
PREFAB	PREFABRICATED
PREFIN	PREFINISHED
PT	PORCELAIN TILE
QT	QUARRY TILE
QTY	QUANTITY
R	RADIUS
RB	RUBBER BASE
RCP	REFLECTED CEILING PLAN
REF	REFERENCE / REFER TO
REFR	REFRIGERATOR
REINF	REINFORCE (D) (ING)
REQD	REQUIRED
RES	RESILIENT
RO	ROUGH OPENING
ROW	RIGHT OF WAY
RTU	ROOF TOP UNIT
SC	SEALED CONCRETE
SCHED	SCHEDULE (D)
SECT	SECTION
SF	SQUARE FEET
SFT	STORE FRONT
SIM	SIMILAR
SPEC	SPECIFICATION
SQ	SQUARE
SS	STAINLESS STEEL
SSM	SOLID SURFACE MATERIAL
STL	STEEL
STN	STAIN
STRUCT	STRUCTURAL
SV	SHEET VINYL
T&G	TONGUE & GROOVE
T.O.	TOP OF
TEMP	TEMPORARY
TV	TELEVISION
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
VCT	VINYL COMPOSITION TILE
VERT	VERTICAL
VFY	VERIFY
VIF	VERIFY IN FIELD
VWC	VINYL WALL COVERING
W	WIDE / WIDTH
W/	WITH
W/O	WITHOUT
WD	WOOD
WOM	WALK OFF MAT

INDEX TO DRAWINGS

ACCEPTANCE

I have received and reviewed the attached Schematic Design package from the BG + co. I have found it to be acceptable and to meet the requirements of this project phase. I hereby authorize the BG + co. and their team of Consultants to proceed to the Design Development phase of the project.

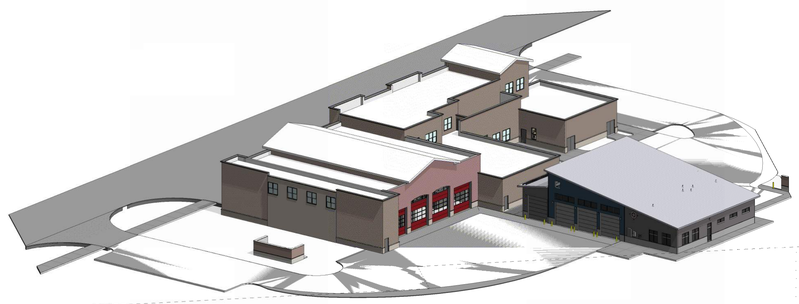
This document is intended to create awareness of the impact to both design and construction schedules and design fees should major design changes occur after this phase.

Approved to proceed to the Design Development Phase:

Owner / Owner's Representative Date

Project Team:
Print Date: 6/14/2023 3:29:53 PM

NORTH WEST VIEW - BASE BID



AXION VIEW

Project Team:
Print Date: 6/14/2023 3:30:26 PM

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Interior Design
Project Management
BLYTHE GROUP + co.

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NEW EMERGENCY CENTER CAMPUS - CRESTED BUTTE FIRE PROTECTION DISTRICT - SEARCH AND RESCUE

CR 317 AND SLATE RIVER
GUNNISON COUNTY, CO
(NORTH CRESTED BUTTE)

CONCEPTUAL IMAGES

SCHEMATIC DESIGN

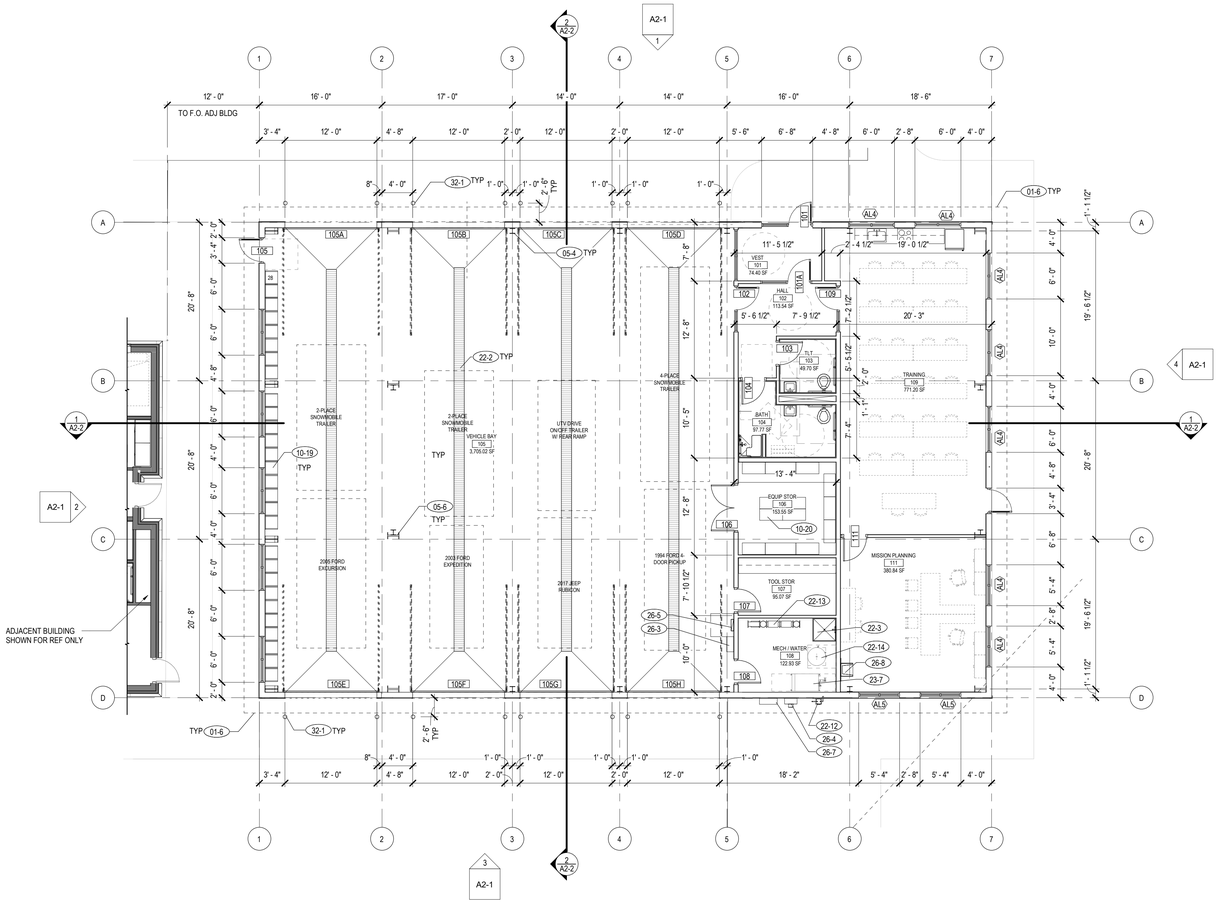
REVISIONS DATE:

DATE: 6/14/2023

PROJECT #: 22033_3

SHEET #:

G0-2



KEYNOTE LEGEND

01-6	DASHED LINES OF ROOF ABOVE
05-4	STEEL COLUMN [REF MB MFR]
05-6	STEEL RIGID FRAME [REF MB MFR]
10-19	METAL LOCKERS
10-20	METAL GEAR STORAGE
22-2	TRENCH DRAIN [REF PLBG AND STRUCT]
22-3	MOP SINK [REF PLBG]
22-12	GAS METER [REF PLBG]
22-13	WATER ENTRY [REF PLBG]
22-14	HOT WATER HEATER [REF PLBG]
23-7	BOILER [REF MECH]
26-3	ELECTRICAL TRANSFORMER BY OTHERS [REF ELEC]
26-4	ELECTRIC METER [REF ELEC]
26-5	POWER PANEL [REF ELEC]
26-7	ELECTRICAL EQUIPMENT [REF ELEC]
26-8	CT CABINET [REF ELEC]
32-1	STEEL BOLLARD - PNT

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NEW EMERGENCY CENTER CAMPUS - CRESTED BUTTE FIRE PROTECTION DISTRICT - SEARCH AND RESCUE

CR 317 AND SLATE RIVER GUNNISON COUNTY, CO (NORTH CRESTED BUTTE)

FLOOR PLAN

SCHEMATIC DESIGN

REVISIONS DATE:

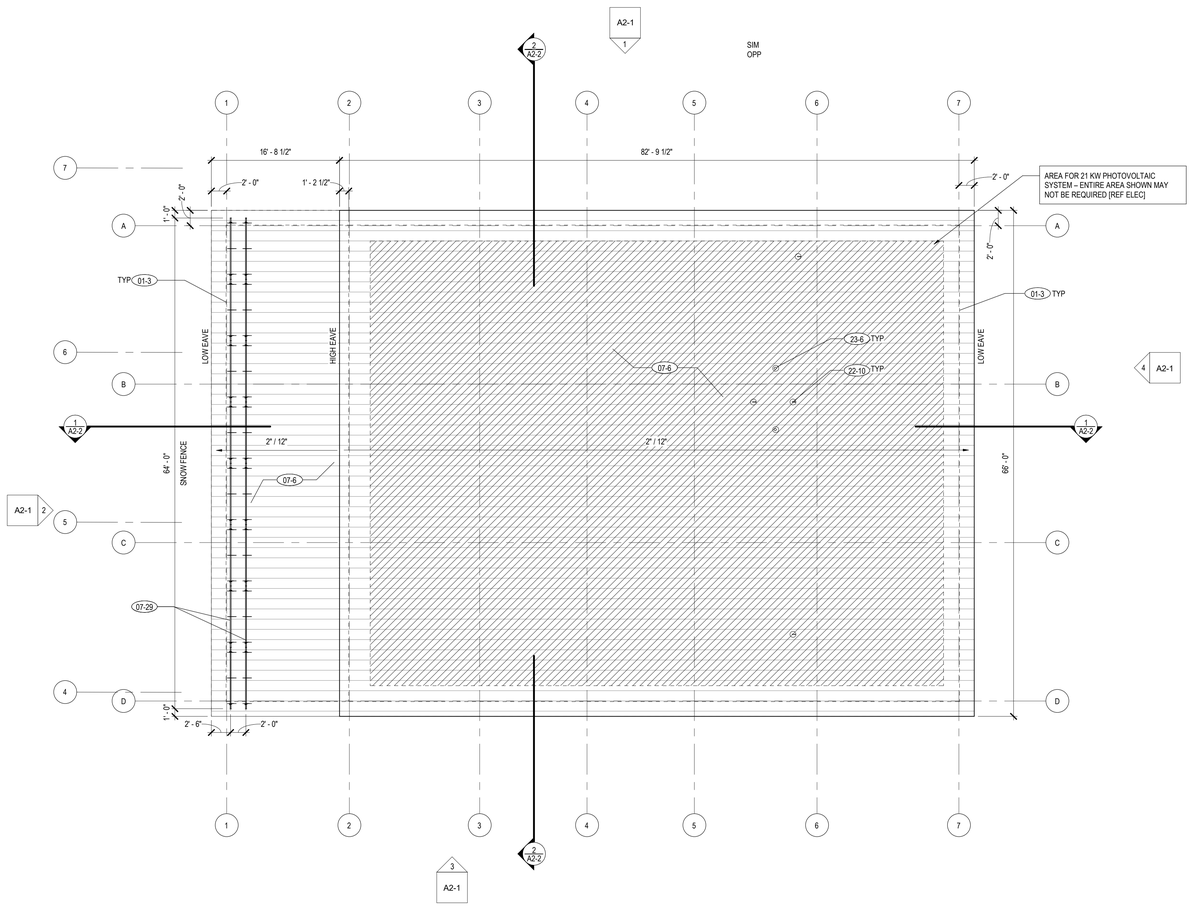
DATE: 6/14/2023

PROJECT #: 22033_3

SHEET #:

A1-1

Project Team:
Print Date: 6/14/2023 3:28:24 PM



NORTH

1 A1-2 ROOF PLAN

1/8" = 1'-0"

KEYNOTE LEGEND

01-3	DASHED LINES OF EXTERIOR WALLS BELOW
07-6	STANDING SEAM METAL ROOF PANELS
07-29	PREFINISHED METAL SNOW FENCE
22-10	VENT [REF PLBG]
23-6	VENT [REF MECH]

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Project Management

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CRESTED BUTTE FIRE PROTECTION DISTRICT
FIRE
EMS
EST. 1973

NEW EMERGENCY CENTER CAMPUS - CRESTED BUTTE FIRE PROTECTION DISTRICT - SEARCH AND RESCUE

CR 317 AND SLATE RIVER GUNNISON COUNTY, CO (NORTH CRESTED BUTTE)

ROOF PLAN

SCHEMATIC DESIGN

REVISIONS DATE:

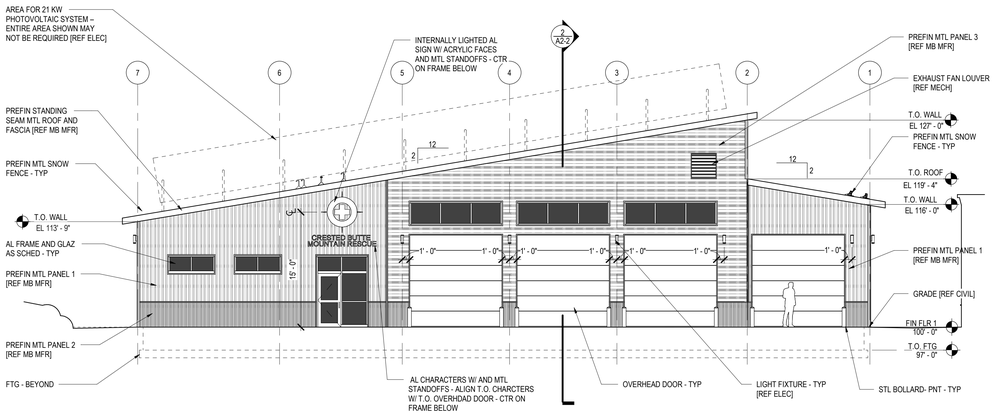
DATE: 6/14/2023

PROJECT #: 22033_3

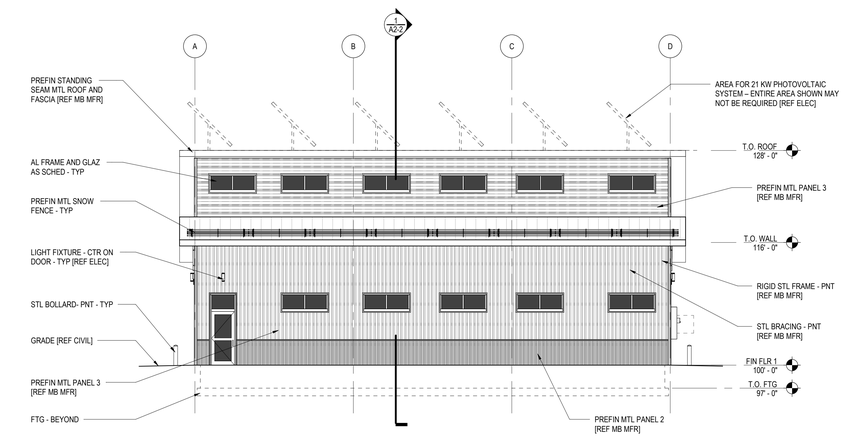
SHEET #:

A1-2

Project Team:
Print Date: 6/14/2023 3:28:25 PM



1 A2-1 EXTERIOR ELEVATION
1/8" = 1'-0"



2 A2-1 EXTERIOR ELEVATION
1/8" = 1'-0"

3 A2-1 EXTERIOR ELEVATION
1/8" = 1'-0"

1 A2-1 EXTERIOR ELEVATION
1/8" = 1'-0"

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CRESTED BUTTE FIRE PROTECTION DISTRICT
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NEW EMERGENCY CENTER CAMPUS - CRESTED BUTTE FIRE PROTECTION DISTRICT - SEARCH AND RESCUE

CR 317 AND SLATE RIVER GUNNISON COUNTY, CO (NORTH CRESTED BUTTE)

EXTERIOR ELEVATIONS

SCHEMATIC DESIGN

REVISIONS DATE:

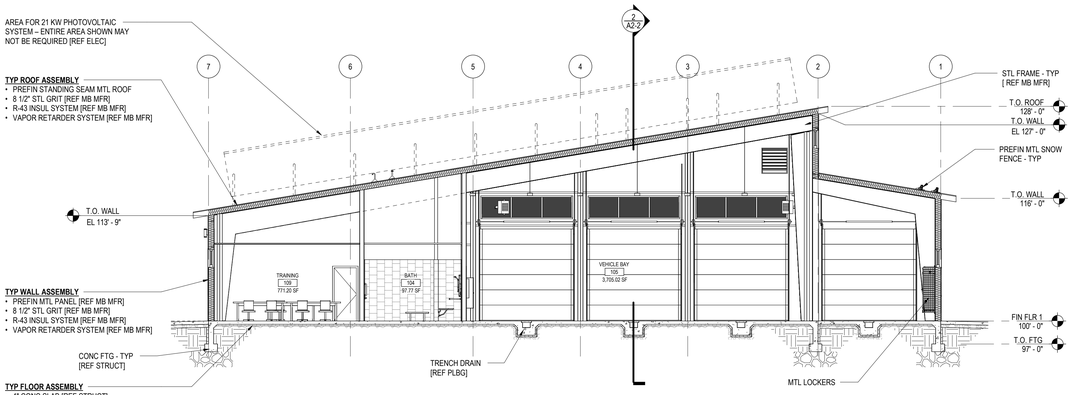
DATE: 6/14/2023

PROJECT #: 22033_3

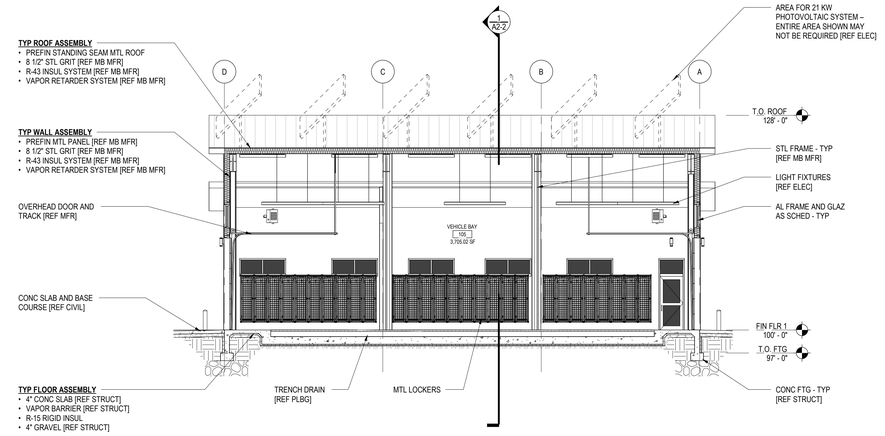
SHEET #:

A2-1

Project Team:
Print Date: 6/14/2023 3:28:27 PM



1 A2-2 BUILDING SECTION
1/8" = 1'-0"



2 A2-2 BUILDING SECTION
1/8" = 1'-0"

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NEW EMERGENCY CENTER CAMPUS - CRESTED BUTTE FIRE PROTECTION DISTRICT - SEARCH AND RESCUE

CR 317 AND SLATE RIVER GUNNISON COUNTY, CO (NORTH CRESTED BUTTE)

BUILDING SECTIONS

SCHEMATIC DESIGN

REVISIONS DATE:

DATE: 6/14/2023

PROJECT #: 22033_3

SHEET #:

A2-2

Project Team:
Print Date: 6/14/2023 3:28:30 PM

APPENDIX B

CRESTED BUTTE FIRE PROTECTION DISTRICT
NEW EMERGENCY SERVICES CAMPUS
Span Subdivision Exemption, Crested Butte, Co 81224
90% Schematic Design Package 02– Search and Rescue (SAR)

REVISION LOG

Revision 1
6/14/2023

DEVELOPMENT AND
PURCHASE AGREEMENT

This DEVELOPMENT AND PURCHASE AGREEMENT (the "Agreement"), dated___, 2023, is between the Board of County Commissioners of Gunnison County, Colorado (the "County") and Crested Butte Fire Protection District, a special district and political subdivision of the State of Colorado ("Developer"). The County and the Developer may be referred to herein individually as a "Party," or collectively as the "Parties."

RECITALS

WHEREAS:

A. The County owns the following real property (the "Property"): LOTS EM2 and EM3, LARKSPUR SUBDIVISION as identified on the plat titled "PLAT OF LARKSPUR LOCATED WITHIN THE E1/2NE1/4 SECTION 12 T14S,R86W, 6TH PRINCIPAL MERIDIAN, COUNTY OF GUNNISON, STATE OF COLORADO dated August 21, 2006, bearing reception # 568254.

B. The County desires to have the Property developed to provide affordable housing for residents of Gunnison County (the "Project").

C. In the interest of furthering public policy, the Colorado General Assembly has declared at Colorado Revised Statues § 29-26-101. Legislative Declaration: "(1) The general assembly hereby finds and declares that:

1. It is in the public interest to maintain a diverse housing stock in order to preserve some diversity of housing opportunities for [Colorado's] residents and people of low—and moderate—income.

2. A housing shortage for persons of low—and moderate—income is detrimental to the public health, safety and welfare. In particular, the inability of such persons to reside near where they work negatively affects the balance between jobs and housing in many regions of the state and has serious detrimental transportation and environmental consequences."

D. The Colorado General Assembly has defined affordable housing to include rentals as follows: C.R.S. § 29-26-102, Definitions, "(1) Affordable housing dwelling unit" means a residential structure that is purchased or rented by and is occupied as a primary residence by one or more income eligible households, or a comparable definition as established by a local government."

E. The Gunnison County Land Use Resolution, which evidences the County's policy with respect to affordable housing, defines "Essential Housing" as "housing for qualified households as determined by the Gunnison

County Housing Authority," and in turn defines "qualified household" as a "household that earns less than 120 percent of the AMI as qualified by the Gunnison County Housing Authority."

F. The Board has the legal authority to convey real property as follows: C.R.S. § 30-11-101, Powers of counties. (1) Each organized county within the state…shall be empowered…(c) To sell, convey, or exchange any real…property owned by the county and make such order respecting the same as may be deemed conducive to the interests of the inhabitants…" (d) To make all contracts and do all other acts in relation to the property and concerns necessary to the exercise of its corporate or administrative powers. Any such contract may by its terms exceed one year and shall be binding upon the parties thereto as to all of its rights, duties and obligations.

G. The Parties have negotiated this Agreement to meet their mutual needs and goals in providing affordable housing for individuals that live and work in the County.

NOW THEREFORE, in consideration of the mutual covenants and conditions contained herein, and for valuable consideration, the receipt and adequacy of which are hereby acknowledged, County and Developer agree as follows:

1. THE PROJECT.

a. The Project consists of the transfer of ownership of the Property to the Developer, and the development of a single-structure, two (2) residential unit complex on Lot EM2 of the Property and a single-structure, three (3) residential unit complex on Lot EM3 of the Property, by the Developer, in accordance with the following "Project Documents":

i. This Agreement; and

ii. Deed Restriction, attached as Exhibit A;

iii. Deed of Trust, attached as Exhibit B.

b. Upon transfer of ownership of the Property to the Developer, the Property will be encumbered by the Deed Restriction, which will be recorded against title to the lots and each of the residential units, and will, among other restrictions:

i. Mandate that the units are available for households that include one or more employees or volunteers of Developer, or which meet the parameters as qualified owners or qualified occupants under the Deed Restriction.

ii. Mandate that rental rates include utilities (water, wastewater, trash, electricity, heat), but do not include telephone, internet, or television.

iii. Prohibit short term rentals, with minimum lease terms of three months.

iv. Provide a process for the Gunnison Valley Housing Authority or County to verify household qualifications and compliance with the Deed Restriction.

v. Provide protection of the Deed Restriction in case of sale of the Property.

2. PURCHASE AND SALE OF THE PROPERTY.

a. Within 14 days of the mutual execution of this Agreement, Developer shall obtain an updated commitment to issue a title insurance policy for the Property. Developer shall disclose any title objections to County within 25 days of mutual execution of this Agreement.

b. Closing shall occur within 55-65 days of mutual execution of this Agreement, on a date and time that is mutually acceptable to the Developer and County ("Closing").

c. The purchase price shall be $200,000, payable by Developer to County in good funds at Closing.

d. Within 20 days of mutual execution of this Agreement, County shall disclose all documents in its possession related to the Property. Developer shall report any objections to County's disclosures within 10 days of receiving County's disclosures.

e. Any objections must be resolved within 40 days of mutual execution of this Agreement. Notwithstanding any other provision of this Agreement, the Developer may terminate this Agreement, without penalty, upon written notice to County at least 10 days prior to Closing, subject to any unavoidable costs charged by the company handling the Closing.

f. Title shall transfer from County to Developer at Closing by special warranty deed, subject to the following permitted encumbrances: The Deed Restriction and matters shown on the Land Title Guarantee Company title commitment for Order No. _____ dated _____.

g. Developer shall be responsible for the cost of the title insurance policy, any closing fee charged by the closing agent, and the cost of recording any documents to be recorded at Closing.

h. The County shall not cause or allow additional exceptions to title to affect the Property prior to Closing without the Developer's prior written consent.

i. At any time prior to Closing and during regular business hours, Developer shall be entitled to enter upon the Property to conduct any review or inspection thereof at the Developer's sole cost and assuming all risk. Developer hereby waives any claims against County that may arise from Developer, or any of Developer's agents, entering the Property.

3. DEVELOPMENT OF THE PROJECT.

a. Developer shall develop the Project, in accordance with the plans finalized and approvals obtained pursuant to the Project Documents, and in accordance with all applicable laws, regulations, and codes.

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b. Except for the obligations of the County expressly set forth herein, the management, conduct, and operation of the Project shall be at the expense and risk of the Developer, and the County shall have no obligations hereunder to facilitate or otherwise promote the completion of the Project.

c. The Developer shall use good faith efforts to solicit and obtain bids from local business concerns which are located in, or owned in substantial part by persons residing within, Gunnison County (a "Local Business") for the completion of the Project by making available to local contractors all plans for the improvements, in the manner reasonably selected by the Developer, which may include, without limitation, publication of solicitations for bids in a newspaper of general circulation in Gunnison County. To the extent the Developer reasonably determines it is feasible, contracts for work to be performed in connection with the construction of the improvements shall be awarded to Local Businesses, provided, however, the Developer shall not be required to award contracts to the lowest bidder, and may award contracts in accordance with the Developer's normal contracting and purchasing policies based upon criteria such as the experience, financial strength, and dependability of the contractors and subcontractors submitting bids.

d. In connection with the foregoing, Developer shall utilize Local Businesses for no less than 50% of the cost of completing the Project. Costs of completing the Project shall include planning and design costs in addition to actual construction costs. Materials purchased directly by Developer from a supplier with a physical presence in Gunnison County and materials purchased by a general contractor or sub-contractor that is a Local Business shall count towards achieving this requirement. The Developer may request a variance from the requirements of this paragraph, and consent shall not be unreasonably withheld by the County, if the Developer demonstrates that the Developer has used reasonable and good faith efforts to procure labor or materials from Local Businesses, but due to market conditions no Local Businesses are able to provide the labor or materials at a cost that allows the project to be completed in a timely and cost-effective manner.

4. INSPECTIONS.

a. The County has the right to inspect the Project upon reasonable notice to the Developer to ensure compliance with this Agreement and to ensure throughout construction that materials, installation and workmanship are of good quality as considered acceptable by industry standards. The inspections may include a review of all construction and other documents applicable to confirming compliance with this Agreement (other than the construction contract); site visits; problem identification and resolution; and provision of reports verifying compliance with this Agreement.

b. The County shall promptly notify Developer of any concerns that the County has regarding the Project.

5. TERM; TERMINATION.

a. The term of this Agreement shall commence on mutual execution of the Agreement and shall continue in full force and effect until terminated in accordance with

paragraph 5~~7~~.c below. Unless expressly and mutually agreed to by the Parties, termination of the Agreement shall have no effect on any provision of this Agreement that is expressly stated to survive termination.

b. The following terms and conditions shall survive termination:

i. The terms of the County Deed Restriction and County Deed of Trust;

ii. Developer's obligation to indemnify and hold the County harmless from any claims or causes of action that arise out of any damage caused by the Developer Parties to the Property during the term of the license described in paragraph 6.a.

c. This Agreement shall terminate upon the any of the following events:

i. The date of issuance of a Certificate of Occupancy for the entire Project; or

ii. The express mutual agreement of the Parties.

6. Breach; Cure; Default; Enforcement.

a. Breach; Cure. If one party breaches any of the terms, obligations, covenants, representations or warranties under this Agreement, the non-breaching Party shall notify the breaching Party of such breach. The breaching party shall have 42 days after written notice from the non-breaching party to cure the breach, or if the breach by its nature cannot be cured within 42 days, the breaching party shall have 42 days to commence a cure and shall act diligently and in good faith to complete the cure in a timely manner.

b. It will not be a breach of this Agreement if a Party is unable to perform its obligations under this Agreement if such inability is caused by acts or omissions of the other Party or its officers, employees, agents, or contractors or is caused by a Force Majeure Event. A "Force Majeure Event" is an Act of God (e.g., fire, flood, inclement weather, epidemic, earthquake); war or act of terrorism; governmental acts, orders, or restrictions; or any other reason where failure to perform is beyond the reasonable control, and is not caused by the negligence, intentional conduct or misconduct of the Party or the Party's officers, employees, agents, or contractors; provided, however, an event of Force Majeure shall not relieve any Party of its obligation to make timely payments of any amounts due hereunder.

c. "Event of Default" means the occurrence of any one of the following events during the term of this Agreement:

i. A breach that is not cured pursuant to paragraph 8.a above;

ii. The dissolution, liquidation, or event of bankruptcy of Developer;

iii. The voluntary or involuntary transfer of ownership of the Property by Developer to any third party without the County's prior written consent.

d. Waiver of breach of any of the provisions of this Agreement by either Party shall not constitute a continuing waiver of any subsequent breach by said Party of either the same or any other provision of this Agreement.

e. Remedies in Event of Default.

i. The Parties agree that damages may not be an adequate remedy for an Event of Default under this Agreement. Therefore, the remedy of specific performance will be available to either party as well as any other remedy available at law or at equity.

7. GENERAL PROVISIONS.

a. Notice. All notices and demands required or allowed to be given hereunder shall be given in writing and delivered by U.S. certified mail, postage prepaid, and return receipt requested, by personal delivery, or by electronic mail, to the address provided below, or to such other address as a Party made provide in writing pursuant to this paragraph. Notices shall be considered given upon the earlier of (a) three business days after deposit in the United States mail, postage prepaid, certified or registered, return receipt requested; (b) personal delivery; or (c) transmission to the electronic mail address provided.

If to County:	If to Developer:
Matthew Birnie MBirnie@gunnisoncounty.org	Sean Caffrey scaffrey@cbfpd.org
with a copy to: Matthew Hoyt MHoyt@gunnisoncounty.org	with a copy to: Lyons Gaddis, PC Attn: John Chmil PO Box 978 Longmont, CO 80502
John Cattles JCattles@gunnisoncounty.org	
Cathie Pagano CPagano@gunnisoncounty.org	

b. Nature of Relationship. This Agreement creates a contractual relationship. The parties do not intend for this Agreement to create a joint venture, fiduciary, partnership, or principal/agent relationship in any respect, either between the Parties or between one or both of them and any third party. Each party shall be solely responsible for its own acts and omissions in the performance of this Agreement.

c. Amendment. This Agreement may be amended only by a written document duly authorized and executed by the Parties hereto.

d. Effect of Invalidity. Nothing contained herein shall be construed as to require the commission of any act contrary to law, and wherever there is a conflict between any

provision contained herein and any present or future law or regulation, the latter shall prevail, but the provisions of this Agreement affected shall be limited only to the extent necessary to bring it within the requirements of such law. If any portion of this Agreement is held invalid or unenforceable for any reason by a court of competent jurisdiction as to either Party or as to both Parties, the Parties will immediately negotiate valid alternative portion(s) that as nearly as possible give effect to any stricken portion(s).

e. Assignability. Neither Party may assign its rights or delegate its duties hereunder without the prior written consent of the other, except that either Party may assign its rights or delegate its duties hereunder to an enterprise or other legal entity wholly owned and controlled by such Party without prior notice or consent of the other Party. Any assignment or transfer of this Agreement without the requisite prior written approval shall be void.

f. Successors and Assigns. This Agreement and the rights and obligations created hereby shall be binding upon and inure to the benefit of the Parties and their respective heirs, successors and assigns in the event assignment is allowed.

g. No Third-Party Beneficiaries. Enforcement of the terms and conditions of this Agreement, and all rights of action relating to such enforcement, shall be strictly reserved to the Parties hereto, and nothing contained in this Agreement shall give or allow any claim or right of action by any other person or entity. It is the express intention of the Parties hereto that any person or entity, other than the Parties to this Agreement, receiving services or benefits under this Agreement shall be deemed to be incidental beneficiaries only.

h. Definitions and Interpretations. Except as otherwise provided herein, nouns, pronouns and variations thereof shall be deemed to refer to the singular or plural, and masculine or feminine, as the context may require. Any reference to a policy, procedure, law, regulation, rule or document shall mean such policy, procedure, law, regulation, rule or document as it may be amended from time to time. Headings and titles contained herein are intended for the convenience and reference of the Parties only and are not intended to define, limit, or describe the scope of intent of any provision of this Agreement.

i. Governing Law; Venue. This Agreement and its application shall be construed in accordance with the laws of the State of Colorado. Venue for the trial of any action arising out of any dispute hereunder shall be exclusively in the District Court, Gunnison County, Colorado.

j. Fees / Costs. Should either Party hereto commence any action or proceeding in court to enforce any provision hereof or for damages by reason of an alleged breach of any provision of this Agreement or for declaratory relief, the prevailing Party shall be entitled to recover from the losing party or parties the costs of such action, including such amount as the court may adjudge to be reasonable attorney fees for services rendered to the prevailing party in such action.

k. Indemnification. Developer, to the extent permitted by law, agrees to indemnify, defend and hold harmless County, its Commissioners, agents and employees of and from

any and all liability, claims, liens, demands, actions and causes of action whatsoever (including reasonable attorney's and expert's fees and costs) arising out of or related to any loss, cost, damage or injury, including death, of any person or damage to property of any kind caused by the misconduct or negligent acts, errors or omissions of Developer or its employees, subcontractors or agents in connection with this Agreement.

l. No Waiver of Governmental Immunity. Nothing in this Agreement is, or shall be construed to be, a waiver, in whole or part, by the County or Developer of governmental immunity provided by the Colorado Governmental Immunity Act or otherwise.

m. Joint Draft. The Parties agree they drafted this Agreement jointly with each having the advice of legal counsel and an equal opportunity to contribute to its content. Therefore, this Agreement shall not be construed for or against a Party on the basis of authorship.

n. Other Interests. Each Party may have other business interests and may engage in any other business, trade, professions, or employment whatsoever, on its own account, or partnership or joint venture with any other person, firm, or corporation, or any other capacity, including, without limitation, the ownership, financing, leasing, operation, management, syndication, brokerage, or development of any real property whether or not in the vicinity of the Property.

o. Time of the Essence. Time is of the essence of this Agreement and of each provision hereof.

p. Additional Acts and Further Assurances. The Parties agree to cooperate as required to carry out the intent of this Agreement. Each Party agrees to execute and deliver whatever additional documents and to perform such additional acts as may be necessary or appropriate to effectuate and perform all of the terms, provisions, and conditions of this Agreement and the transactions contemplated by this Agreement.

q. Authority. The signatories below represent and affirm they are legally authorized to bind their respective Parties by this Agreement.

r. Counterparts; Facsimile / Electronic Signatures. This Agreement may be executed in multiple counterparts, each of which shall constitute an original, and all of which together shall constitute one and the same document. The Parties will accept facsimile signatures or electronic signatures as original signatures.

IN WITNESS WHEREOF, the Parties have executed this Agreement the day and year first above written.

The Crested Butte Fire Protection District, a political subdivision of Colorado

By:_____ _____
Name: Chris McCann Date
Title: Chairman

The Board of County Commissioners of the County of Gunnison, Colorado

By:_____ _____
Name: Matthew Birnie Date
Title: County Manager

RETURN TO:
GVRHA
202 E. Georgia Avenue
Gunnison, CO 81230

GUNNISON COUNTY MASTER DEED RESTRICTION

THIS GUNNISON COUNTY MASTER DEED RESTRICTION ("Restriction" or "Restrictions") is entered into this ____ day of _____, 202__~~1~~ by the Crested Butte Fire Protection District (the "Grantor"), and each the Gunnison Valley Regional Housing Authority of Gunnison, Colorado, and Gunnison County (the "Beneficiaries") which are duly organized under and by virtue of the laws of the State of Colorado. The Grantor~~Owner~~ and Beneficiaries are sometimes referred to herein collectively as the "Parties." This Restriction replaces and supersedes in its entirety any other previous deed restriction regarding occupancy and resale encumbering the Property, defined below.

1. Property Subject to Deed Restriction. The following real property (the "Property") is hereby made subject to these Affordable Housing Restrictions ("Restrictions"):
   LOTS EM2 and EM3, LARKSPUR SUBDIVISION as identified on the plat titled "PLAT OF LARKSPUR LOCATED WITHIN THE E1/2NE1/4 SECTION 12 T14S,R86W, 6TH PRINCIPAL MERIDIAN, COUNTY OF GUNNISON, STATE OF COLORADO dated August 21, 2006, bearing reception # 568254

Commonly known as **30 Nicky Ct and 12 Nicky Ct, Crested Butte, CO 81224**

WHEREAS, the Beneficiaries, acting as the original declarant, intend to create a valid and enforceable covenant running with the land that assures that all of the Property hereby existing or to be developed on the Property will be used solely by individuals who are either Qualified Owners or Qualified Occupants (as such terms are hereinafter defined), subject to limited exceptions provided for herein; and

WHEREAS, both the Grantor and the Beneficiaries recognize the public need for attainable and affordable housing for the workforce and working families of Gunnison County, particularly within the Gunnison Valley; and

WHEREAS, under this Restriction the Grantor and Beneficiaries intend, declare, and covenant that the regulatory and restrictive covenants set forth herein governing the use of the Property described and provided for herein shall be and are hereby made covenants running with the land and are intended to be and shall be binding upon the Beneficiaries and Grantor, and all subsequent owners of such Property for the stated term of this Restriction, unless and until this Restriction is released and terminated in the manner hereafter described.

2. Definitions

   i. AREA MEDIAN INCOME (AMI) means the median income for Gunnison County adjusted for household size. as established and defined in the most recent annual schedule published by the U.S. Department of Housing and Urban Development (HUD).

ii. CAPITAL IMPROVEMENT means any fixture erected as a permanent improvement to the Property excluding repair, replacement, maintenance costs, and sweat equity.

iii. COUNTY shall mean the Board of County Commissioners of Gunnison County, Colorado.

iv. GUIDELINES mean the most current Gunnison Valley Regional Housing Authority Housing Guidelines or Gunnison County Housing Guidelines if the Gunnison Valley Regional Housing Authority ceases to exist or is replaced by some other entity, in effect at the time of closing on a sale or transfer of the Property or at the commencement date of a lease or other occupation agreement, or its successor document, as amended from time to time and attached hereto as Exhibit A.

v. FIRST MORTGAGE means a deed of trust or mortgage that is recorded senior to any other deeds of trust or liens against the Property to secure a loan used to purchase the Property by a Mortgagee.

vi. HOUSEHOLD means one or more persons who intend to live together on the Property as a single housekeeping Property.

vii. HOUSING AUTHORITY means the Gunnison Valley Regional Housing Authority. Unless expressly stated otherwise in this Deed Restriction, "Housing Authority" shall refer to the Gunnison Valley Regional Housing Authority, except that if the Gunnison Valley Regional Housing Authority ceases to exist or is replaced by some other entity, "Housing Authority" shall refer to the County.

viii. MAXIMUM RESALE PRICE means the maximum Purchase Price that shall be paid by any purchaser of the Property, other than the initial purchaser who acquires the Property from the Beneficiaries that is determined in accordance with the provisions of Section 6.iii of this Restriction. The Maximum Resale Price is not a guaranteed price, but merely the highest price an Owner may obtain for the sale of the Property.

ix. MORTGAGEE means any bank, savings and loan association, or any other institutional lender that is licensed to engage in the business of providing purchase money mortgage financing for residential real property and that is the beneficiary of a deed of trust or mortgage encumbering the Property.

x. NON-QUALIFIED OWNER or NON-QUALIFIED TRANSFEREE means an Owner that is not a Qualified Owner.

xi. NET WORTH means the estimated sum of the assets of the Qualified Owner or Qualified Occupant. The term *Asset* refers to liquid assets such as cash in savings, checking or other forms of bank accounts and stocks, bonds or other instruments that can readily be converted to cash. The most recent Assessed Value as provided by the applicable Assessor's Office will be used to determine the value of real estate holdings, regardless of set-offs by encumbrances, costs of sale or holding, or percent of ownership interest. Assets in a qualified retirement plan and other non-liquid assets such as personal belongings or intangible assets will not be included in the asset limitations for each income category.

xii. OWNER means the Grantor and any subsequent buyer, heir, devisee, transferee, grantee, owner or holder of title to the Property, or any portion of the Property.

xiii. PUBLIC ENTITY means local government or special district organized for the sole purpose of serving the public. Special districts which limit service to a Home Owner's Association or Property Owner's Association shall be excluded.

xiv. PURCHASE PRICE means all consideration paid by the purchaser to the seller for the Property.

xv. QUALIFIED OWNER means (1) the Grantor; or (2) a natural person who meets the following requirements at the time that he/she takes ~~initial~~ ownership interest or transfer of interest in the Property as qualified by the Beneficiaries:

a. Is employed by or is an active volunteer member of Grantor~~the Crested Butte Fire Protection District or other Public Entity working a minimum of 30 hours per week on an annual basis as documented with the United States Internal Revenue Service, within Gunnison County, or has a qualified employment contract with an employer in Gunnison County that has been accepted by the Beneficiaries~~; and

b. Except as provided for in Section 4.i.b. and 4.1.c., does not own any interest in other improved residential property(s). A purchaser who owns residential real estate must convey all interest in said residential property(s) prior to taking initial ownership or transfer of interest of the Property; and

c. A qualified household shall not have a net worth that exceeds four (4) times the income based on the AMI applicable to actual household size of a prospective purchaser, such AMI set by HUD annually and adjusted for household size.

d. Shall occupy the Property as his/her sole and exclusive primary residence at all times during the ownership of the Property.

OR

a. Has maintained his/her primary and sole residence in Gunnison County, Colorado for six (6) consecutive months immediately preceding taking initial ownership or transfer of interest in the Property or has a qualified employment contract with an employer in Gunnison County that has been accepted by the Beneficiaries; and

b. Has earned his/her primary (80% or more) source of income working a minimum of 30 hours per week on an annual basis, as documented with the United States Internal Revenue Service, within Gunnison County, or has a qualified employment contract with an employer in Gunnison County that has been accepted by the Beneficiaries; and

c. Except as provided for in Section 4.i.b. and 4.1.c., does not own any interest in other improved residential property(s). A purchaser who owns residential real estate must convey all interest in said residential property(s) prior to taking initial ownership or

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transfer of interest of the Property; and

d. A qualified household shall not have a net worth that exceeds four (4) times the income based on the AMI applicable to actual household size of a prospective purchaser, such AMI set by HUD annually and adjusted for household size.

e. Income restrictions are applicable at the time of qualification, when taking an initial ownership interest in the Property, and shall be verified by the Beneficiaries. Income guidelines are based on the Area Median Income (AMI) set by HUD annually and adjusted for household size. At the time of initial ownership or transfer of interest the combined household income shall not exceed 150% of AMI; and

f. Shall occupy the Property as his/her sole and exclusive primary residence at all times during the ownership of the Property.

~~xv.~~xvi. QUALIFIED OCCUPANT means a person who meets the following requirements at the time he or she takes initial occupancy of the Property as qualified by the Beneficiaries:

a. Is employed by or is an active volunteer member of Grantor~~the Crested Butte Fire Protection District or is employed by an or other Public Entity working a minimum of 30 hours per week on an annual basis as documented with the United States Internal Revenue Service, within Gunnison County, or has a qualified employment contract with an employer in Gunnison County that has been accepted by the Beneficiaries~~; and

b. Except as provided for in Section 4.i.b. and 4.1.c., does not own any interest in other improved residential property(s). A purchaser who owns residential real estate must convey all interest in said residential property(s) prior to taking initial ownership or transfer of interest of the Property; and

c. A qualified household shall not have a net worth that exceeds four (4) times the income based on the AMI applicable to actual household size of a prospective purchaser, such AMI set by HUD annually and adjusted for household size.

d. Shall occupy the Property as his/her sole and exclusive primary residence at all times.

OR

a. Has maintained primary and sole residence in Gunnison County, Colorado for three consecutive months immediately preceding taking initial occupancy of the Property or has a qualified employment contract with an employer in Gunnison County that has been accepted by the Housing Authority; and

b. Has earned his/her primary (80% or more) source of income working a minimum of 30 hours per week on an annual basis, as documented with the United States Internal Revenue Service, within Gunnison County, or has a qualified employment contract with an employer in Gunnison County that has been accepted by the Beneficiaries; and

c. Except as provided for in Section 4.i.a. and 4.i.c., does not own any interest in other improved residential property(s). An occupant who owns residential real estate must convey all interest in said residential property(s) prior to taking initial occupancy of the

Property; and

d. A qualified household shall not have a net worth that exceeds two (2) times the income based on the AMI applicable to actual household size of a prospective occupant, such AMI set by HUD annually and adjusted for household size; and

e. Income restrictions are only applicable at the time of taking initial occupancy and shall be verified by the Beneficiaries. Income restrictions are based on the Area Median Income (AMI) set by HUD annually and adjusted for household size. At the time of initial occupancy, the combined household income shall not exceed 150% of AMI; and

f. Shall occupy the Property as his/her sole and exclusive primary residence.

~~xvi.~~xvii. TRANSFER means an act of a party, or of the law, by which the title to a Property is wholly or partially transferred to another; including but not limited to the sale, assignment voluntary, involuntary or by operation of law (whether by deed, contract of sale, gift, devise, bequest, trustee's sale, deed in lieu of foreclosure, or otherwise) of any interest in the Property, including but not limited to a fee simple interest, a joint tenancy interest, a tenancy in common, a life estate, a leasehold interest or any interest evidenced by a land contract by which possession of the Property is transferred and Owner retains title, except that, this definition does not include any transfer of an interest by the Beneficiaries.

If reviewed and approved in writing by the Beneficiaries prior to occurrence the following transfer(s) are exceptions to the definition, provided that the new Owner, other than an estate, shall use the Property as his/her principal residence:

a. A transfer resulting from the death of an Owner where the transfer is to the spouse or domestic partner who is also a Qualified Owner.

b. A transfer resulting from a decree of dissolution of marriage or legal separation or from a settlement incidental to such a decree by which a transfer is made to a spouse who is also a Qualified Owner.

3. Restriction Runs with the Land and Interests.

a. This Restriction shall constitute covenants running with title to the Property as a burden thereon, for benefit of, and enforceable by, each of the Beneficiaries, and their successors and assigns, and this Restriction shall bind the Beneficiaries and all subsequent Owners and occupants of the Property. Each Owner and Qualified Occupant, upon earlier of acceptance of a deed or lease to the Property or executing this Restriction, shall be personally obligated hereunder for the full and complete performance and observance of all covenants, conditions, and restrictions contained herein during the Owner's period of ownership or Qualified Occupant's tenancy, as may be appropriate. Each and every Transfer or lease of the Property, for all purposes, shall be deemed to include and incorporate by this reference, the covenants contained in this Restriction, even without reference to this Restriction in any document of conveyance.

b. Neither Beneficiary may sell, transfer or assign their interest in the Restriction without the express written permission of the other. If one of the Beneficiaries ceases to exist, that Beneficiary's interest in the Restriction shall be deemed to be assigned to the remaining Beneficiary. In the event of a dispute between the Beneficiaries regarding interpretation, enforcement or otherwise of this Restriction or any portion of it, the position of Gunnison County shall prevail.

4. Ownership, Use, Occupancy and Rentals.

i. Ownership.

a. Qualified Owner(s). The ownership of the Property~~arcel~~ is hereby, and shall henceforth be, limited exclusively to Qualified Owner(s) which shall include the parties described and approved as set forth in Section 4.ii. In the event that the Property is occupied without compliance with this Restriction, the Beneficiaries shall have the remedies set forth herein, including but not limited to the rights under Section 8 herein.

b. Employee Housing. Upon the written consent of the Beneficiaries, which consent may be recorded, a non-qualifying natural person or entity that owns or operates a business located in and serving the county may purchase the Property, provided, however, that by taking title to the Property, such Owner shall be deemed to agree to the rental restrictions set forth herein, and further that any Owner who does not meet the definitions of both a Qualified Owner and Qualified Occupant shall rent the Property to a natural person(s) who does meet the definitions of a Qualified Occupant, and shall not occupy or use the Property for such Owner's own use or leave the Property vacant except as otherwise provided herein.

c. Rental Projects. Upon the written consent of the Beneficiaries, which consent may be recorded, a non-qualifying natural person or entity may own the Property for the purpose of operating a rental project. However, by taking title to the Property, such Owner shall be deemed to agree to the rental restrictions set forth herein, and further that any Owner who does not meet the definitions of both a Qualified Owner and Qualified Occupant shall rent the Property to a natural person(s) who does meet the definitions of a Qualified Occupant, and shall not occupy or use the property for such Owner's own use or leave the Property vacant except as otherwise provide herein.

ii. Use and Occupancy. Except as provided for in Section 4.i.b and 4.i.c here in, the use and occupancy of the Property is hereby, and shall henceforth be, limited exclusively to Qualified Owner(s) or Qualified Occupant(s), his or her spouse and child(ren) and other immediate family members.

iii. Rental of Property.

a. Qualified Owner(s). An owner may not, except with prior written approval of the Beneficiaries' conditions of approval, rent the Property to a Qualified Occupant(s) for ~~no~~ less than six (6) months or~~and no~~ more than one (1) year and occurring not more than once every five (5) years. All rentals must comply with the current Guidelines. The foregoing notwithstanding, Grantor may rent the Property to a Qualified Occupant

that is an employee or volunteer of Grantor for any period of time.

b. Employee Housing. A non-qualifying natural person or entity that owns the Property, pursuant to Section 4.i.b, may rent the Property for any period of time. All renters must be Qualified Occupants. Any occupancy of the Property pursuant to sections 4.i.b and 4.iii.b shall not exceed two persons per bedroom, unless the Beneficiaries approve otherwise.

c. Rental Projects A non-qualifying natural person or entity that owns the Property, pursuant to Section 4.i.c, may rent the Property for any period of time. All renters must be Qualified Occupants. Any occupancy of the Property pursuant to Sections 4.i.c and 4.iii.c shall not exceed two persons per bedroom, unless the Beneficiaries approve otherwise.

iv. Roommates. The requirements of this Restriction shall not preclude the Owner from sharing occupancy of the Property with non-owners on a rental basis provided that the non-owner(s) is also a Qualified Occupant. Owner continues to occupy the Property as his/her sole and primary residence and meets the obligations contained in this Restriction, including the definition of Qualified Owner or Qualified Occupant. Short-term rentals/roommates are strictly prohibited.

v. No Indemnification or Waiver of Immunity. Nothing herein shall be construed to require either of the Beneficiaries to protect or indemnify the Owner against any losses attributable to a rental including, but not limited to, non-payment of rent or damages to the Property; nor to require either of the Beneficiaries to obtain a Qualified Occupant for the Owner in the event that none is found by the Owner. In addition, nothing herein shall be construed as a waiver by any~~either~~ of the Parties' ~~Beneficiaries'~~ governmental immunity provided by the Colorado Governmental Immunity Act or other applicable law.

vi. Initial Finance and Refinance Restriction.

a. At the time of the purchase of the Property the original principal amount of any indebtedness secured by a First Mortgage shall not exceed an amount equal to one hundred percent (100%) of the Purchase Price paid for the Property by that Owner, subject to the Guidelines.

b. An Owner may refinance a First Mortgage that encumbers the Property with the consent of the Beneficiaries; provided, however, that the original principal amount of any refinanced indebtedness secured by a First Mortgage shall not exceed an amount equal to ninety-seven percent (97%) of the then current Maximum Resale Price limit.

vii. Ownership Interest in Other Residential Property. Except with respect to a Non- Qualified Owner permitted to purchase a Property as set forth in Section 4 or Grantor, if at any time the Owner also owns any interest alone or in conjunction with others in any other developed residential property in or out of the County, the Owner shall immediately list such other property interest for sale and sell his or her interest in such property. In the event said other property has not been sold by the Owner within one hundred twenty (120) days of its listing required hereunder, then the Owner shall immediately list his or her Property for sale

pursuant to Section 8.v. of this Restriction. In the case of an Owner whose business is the construction and sale of residential properties or the purchase and resale of such properties, the properties that constitute inventory in such Owner's business shall not constitute "other developed residential property" as that term is used in this Section 4.vii. provided that the Owner is not occupying any of the inventoried properties for residential or commercial purposes.

viii. Compliance. Any Owner of the Property is required to comply with annual certifications to the Beneficiaries that they are in compliance with the requirements of this Restriction. The Housing Authority acknowledges and recognizes that the income and net worth of a Qualified Owner or Qualified Occupant may increase over time, however, such increases over the maximum income and net worth requirements at initial purchase or occupancy shall not constitute a default of this Restriction.

5. Initial Purchase Price. Upon completion of construction of the Property, the Property ~~shall~~ may be sold to a Qualified Owner~~, except as provided for in Section 4.i. of this Restriction,~~ at an affordable Purchase Price as determined by the Guidelines or rented to a Qualified Occupant.

6. Transfer of Property.

i. Resale. No Transfer of the Property shall occur subsequent to the original purchase from the County or the Beneficiaries, except upon full compliance with the procedures set forth in this Section 6. In the event the Property is sold and/or conveyed without compliance with this Restriction, such sale and/or transfer shall be wholly null and void and shall confer no title whatsoever upon the purported buyer.

ii. Notice of Intent. The Property shall not be sold or transferred without prior submission by the Qualified Owner to the Housing Authority of a written Notice of Intent to Sell or Transfer Affordable Housing Unit as set forth in Exhibit C attached hereto.

iii. Maximum Resale Price.

a. The initial purchase price of the Property shall be the basis for calculating the Maximum Resale Price in accordance with this Restriction and the Guidelines in effect at the time of listing the Property for sale.

b. The Maximum Resale Price of the Property shall be limited to be no more than the following calculation:

The Maximum Resale Price may not exceed the sum of: (i) the Purchase Price paid by the Owner for the Property, plus: (ii) an increase of two percent (2%) of such Purchase Price per year (prorated at the rate of 1/12 for each whole month, but not compounded annually) from the date of the Owner's purchase of the Property to the date of the Owner's Notice of Intent to Sell the Property; plus (iii) an amount equal to any special improvement district assessments, if applicable and not transferable, paid by the seller during the seller's ownership of the Property; (iv) the cost of Permitted Capital

Improvements made to the Property by the Owner as set forth in Exhibit D attached hereto.

c. Permitted Capital Improvements. The amount for Permitted Capital Improvements shall not exceed ten per cent (10%) of the original purchase price for an initial ten (10) year period. For every ten (10) year period from the earlier of the date of the original purchase of the Property or the execution of this Restriction, another ten (10) per cent of the purchase price may be added to the value of the Property for Capital Improvements. In calculating such amount, only those Permitted Capital Improvements identified in Exhibit C hereto shall qualify for inclusion. Seller's contributed labor or "sweat equity" shall not be part of the cost of an eligible improvement.

d. Pursuant to the Guidelines, each Owner shall be responsible for ensuring that at the Transfer of his or her Property, the same is clean, the appliances are in working order, and that there are no health or safety violations regarding the Property. Prior to the sale of the Property the Beneficiaries are authorized to take necessary actions and incur necessary expenses for bringing the Property into saleable condition. Such actions and expenses include, but are not limited to, cleaning the Property and making necessary repairs to or replacements of appliances and/or Property fixtures, such as windows, doors, cabinets, countertops, carpets, flooring and lighting fixtures, and/or correcting any health or safety violations on the Property. Expenses incurred by the Beneficiaries to bring the Property into a saleable condition shall be itemized and documented by the Housing Authority and deducted from the Owner's proceeds at closing of the Transfer of the Property.

e. No Owner shall permit any prospective purchaser to assume any or all of the Owner's closing costs. No Owner shall accept anything of value from a prospective purchaser except for the Maximum Resale Price before, during or after closing of the Transfer of the Property.

f. Nothing in this Restriction represents or guarantees that the Property will be re-sold at an amount equal to the Maximum Resale Price. Depending upon conditions affecting the real estate market, the Property may be re-sold for less than the Maximum Resale Price.

iv. Grantor Right to Acquire Ownership – Right of First Refusal. The initial Owner, after Grantor, and each subsequent Owner shall not transfer the Property, or any part thereof, without first offering the same to the Grantor. The Grantor shall have a right of first refusal to purchase the property as follows:

a. If an Owner receives any offer to purchase or tenders any offer of sale for the Property for any amount less than or equal to the Maximum Resale Price, the Grantor shall have the absolute right of the first refusal to purchase the Property at the offered sales price.

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b. Grantor shall have the option to exercise its right of first refusal by executing a written and binding commitment to purchase the Property within twenty-on (21) days after Grantor receives written Notice of Intent to Sell or Transfer Affordable Housing Unit by Owner. The commitment to buy shall set a closing date within a reasonable period of time.

c. Grantor shall have the right to inspect the Property prior to exercising its right of first refusal. If the Property is damaged there shall be a decrease in the sales price of the Property equal to the amounts necessary to bring the Property into saleable condition as reasonably determined by the Grantor, including but without limitation cleaning, painting, replacing worn carpeting and draperies; making necessary structural, mechanical, electrical and plumbing repairs; and repairing or replacing built-in appliances and fixtures.

d. In the event Grantor fails to execute a written and binding commitment to purchase the Property within said twenty-one (21) day period, this right of first refusal shall expire.

e. If the Owner does not sell or otherwise transfer the Property, the terms and conditions of this right of first refusal shall again apply to any subsequent sale or transfer of the Property.

f. This right of first refusal shall be in full force and effect from the earlier of the date of initial sale of the Property, or any part thereof, by Grantor to the initial Owner or the execution of this Restriction and continues in perpetuity. Any sale or attempted transfer of the Property, or any part thereof, effected without first giving Grantor the right of first refusal described above shall be wholly null and void and shall confer no title whatsoever upon the purported buyer.

~~iv.~~v. Beneficiaries Right to Acquire Ownership - Right of SecondFirst Refusal. ~~The initial Owner and each subsequent Owner shall not transfer the Property, or any part thereof, without first offering same to each of the Beneficiaries for purchase.~~ Each of the Beneficiaries shall have a right of secondfirst refusal to purchase the Property as follows:

a. If an Owner receives any offer to purchase or tenders any offer of sale for the Property for any amount less than or equal to the Maximum Resale Price and Grantor does not exercise its right of first refusal pursuant to 6.iv, each of the Beneficiaries shall have the absolute right of the secondfirst refusal to purchase the Property at the offered sales price. This right of secondfirst refusal will first be granted to the County, using the form attached here to as Exhibit E, and then the Gunnison Valley Regional Housing Authority, using the form attached hereto as Exhibit F, only if the County does not exercise its right of secondfirst refusal.

b. Each of the Beneficiaries shall have the option to exercise its right of secondfirst refusal, with the County prevailing as detailed in 6.~~i~~v.a., by executing a written and

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binding commitment to purchase the Property within twenty-on (21) days after each of the Beneficiaries receives written Notice of Intent to Sell or Transfer Affordable Housing Unit by Owner and confirmation that Grantor has not exercised its right of first refusal. The commitment to buy shall set a closing date within a reasonable period of time.

c. Each of the Beneficiaries shall have the right to inspect the Property prior to exercising its right of second~~first~~ refusal. If the Property is damaged there shall be a decrease in the sales price of the Property equal to the amounts necessary to bring the Property into saleable condition as reasonably determined by the Beneficiaries, including but without limitation cleaning, painting, replacing worn carpeting and draperies; making necessary structural, mechanical, electrical and plumbing repairs; and repairing or replacing built-in appliances and fixtures.

d. In the event neither of the Beneficiaries executes a written and binding commitment to purchase the Property within said twenty-one (21) day period, this right of second~~first~~ refusal shall expire.

e. If the Owner does not sell or otherwise transfer the Property, the terms and conditions of this right of second~~first~~ refusal shall again apply to any subsequent sale or transfer of the Property.

f. This~~e~~ right of second~~first~~ refusal shall be in full force and effect from the earlier of the date of initial sale of the Property, or any part thereof, to the initial Owner or the execution of this Restriction and continues in perpetuity. Any sale or attempted transfer of the Property, or any part thereof, effected without first giving both of the Beneficiaries the right of second~~first~~ refusal described above shall be wholly null and void and shall confer no title whatsoever upon the purported buyer.

~~v.~~vi. Beneficiaries Made Whole. No transfer of the Property shall occur unless and until each and every encumbrance, debt or liability owed by the Owner to the Beneficiaries is fully satisfied.

7. Foreclosure

i. It shall be a breach of these Restrictions for an Owner to default in the payments or other obligations due or to be performed under a promissory note secured by deed of trust or lease purchase agreement encumbering the Property. The Owner hereby agrees to notify the Beneficiaries, in writing, of any notification Owner receives from a lender, or its assigns, of past due payments or default in payment or other obligations due or to be performed under a promissory note secured by a deed of trust or lease purchase agreement, as described herein, within five (5) calendar days of Owner's notification from lender, or its assigns, of said default or past due payments

ii. Upon receipt of notice as provided herein, the Beneficiaries shall have the right, in its sole discretion, to solely or jointly cure the default or any portion thereof, thereby becoming the Curing Party. In such event, the Owner shall be personally liable to the Curing Party for past due payments made by the Curing Party, together with interest thereon at the rate specified in the promissory note secured by the deed of trust or lease purchase agreement, plus one (1) per cent, and all actual expenses of the Curing Party incurred in curing the default. In the event the Owner does not repay the Curing Party within sixty (60) days of notice that the Curing Party has cured the Owner's default, the Owner agrees that the Curing Party shall be entitled to a lien against the Property to secure payment of such amounts. Such a lien may be evidenced by a notice of lien setting the amounts due and rate of interest accruing thereon, and such notice of lien may be recorded in the real property records of Gunnison County, Colorado, until such lien is paid and discharged. The Curing Party shall have the additional right to bring an action to foreclose on the Property for the payment of the lien set forth in this section 7.ii.

iii. In the event of a foreclosure on a promissory note secured by a first deed of trust or a lease purchase agreement on the Property, or any portion of the Property, and the issuance of a public trustee's deed by the holder of such note and deed of trust ("Holder"), or the acceptance by Holder of such note and deed of trust or a deed in lieu of foreclosure of the Property, and Holder's subsequent recordation of the same in the Office of the Gunnison County Clerk and Recorder, the Beneficiaries may acquire the Property by exercising that certain "Option to Purchase," the copies of which is attached hereto as Exhibits E and F. In the event that the Option is not exercised by either of the Beneficiaries, this Deed Restriction shall be released and shall be of no further force or effect.

8. Default/Breach

i. In the event either of the Beneficiaries has reasonable cause to believe an Owner is violating the provisions of these Restrictions, that entity, through its authorized representatives, may inspect the Property between the hours of 8:00 a.m. and 5:00 p.m. Monday through Friday, after providing the Owner with no less than 24 hours written notice.

ii. The respective Beneficiary shall send a notice of violation to the Owner, with a copy to the other Beneficiary, detailing the nature of the violation and allowing the Owner fifteen (15) days to determine the merits of the allegations, or to correct the violation. In the event the Owner disagrees with the allegation of violation of these Restrictions, the Owner may request, in writing, a hearing before the Gunnison Valley Regional Housing Authority Grievance and Appeals Committee or some similar body convened by the County if the Gunnison Valley Regional Housing Authority Grievance and Appeals Committee ceases to exist or is replaced. If the Owner does not request a hearing and the violation is not cured within the fifteen-day period, the Owner shall be considered in violation of these Restrictions.

iii. Whenever these Restrictions provide for a hearing before the Gunnison Valley Regional Housing Authority Grievance and Appeals Committee, such hearing shall be scheduled by

the Beneficiaries within twenty-one (21) days of the date of receipt of a written request for a hearing. At any such hearing, the Owner or other aggrieved party may be represented by counsel and may present evidence on the issues to be determined at the hearing. An electronic record of the hearing shall be made, and the decision of the Beneficiaries shall be a final decision, subject to judicial review.

iv. There is hereby reserved to the parties hereto any and all remedies provided by law for breach of these Restrictions or any of its terms. In the event the parties resort to litigation with respect to any or all provisions of these Restrictions, the prevailing party shall be awarded its damages, expenses and costs, including reasonable attorney's fees.

v. In the event the Property is sold and/or conveyed without compliance with the terms of these Restrictions, such sale and/or conveyance shall be wholly null and void and shall confer no title whatsoever upon the purported buyer. Each and every conveyance of the Property, for all purposes, shall be deemed to include and incorporate by this reference the covenants herein contained, even without reference therein to these Restrictions.

vi. In the event an owner fails to cure any breach of these Restrictions, each of the Beneficiaries may resort to any and all available legal or equitable actions, including but not limited to specific performance of these Restrictions, an injunction against future sale(s) in violation of these Restrictions, or eviction of noncomplying owners and/or occupants.

vii. In the event of a breach of any of the terms or conditions contained herein by an Owner, his or her heirs, successors or assigns, the Owner's initial purchase price of the Property shall, upon the date of such breach as determined by either of the Beneficiaries, automatically cease to increase as set out in Section 6.iii. of this Restriction, and shall remain fixed until the date of cure of said breach or until the Owner repays the Curing Party.

10. General Provisions

i. These Restrictions shall constitute covenants running with the Real Property as a burden thereon, for the benefit of, and shall be specifically enforceable by each of the Beneficiaries and/or its respective successors and assigns, as applicable. Enforcement by any appropriate legal action may include, but is not limited to specific performance injunction, reversion, or eviction of noncomplying owners and/or occupants.

ii. Equal Housing Opportunity. Pursuant to the Fair Housing Act and each of the public policy, the Housing Authority shall not discriminate on the basis of race, creed, color, sex, national origin, familial status, disability or sexual orientation in the lease, sale, use or occupancy of the Property.

iii. Waiver of Exemptions. Every Owner, by taking title to the Property, shall be deemed to have subordinated to this Restriction any and all right of homestead and any other

exemption in, or with respect to, such Property under state or federal law presently existing or hereafter enacted.

iv. Any notice, consent, approval, or request which is required to be given by any party hereunder shall be given by mailing the same, certified mail, return receipt requested, properly addressed and with postage fully prepaid, to the address provided herein or to the address of the owner. The Owner shall also notify, in writing, the Beneficiaries of any change in address.

To Beneficiaries:	Gunnison County Manager 200 E. Virginia Avenue Gunnison, Colorado 81230 Fax: 970-641-3061 AND Gunnison Valley Regional Housing Authority Executive Director 202 E. Georgia Avenue Gunnison, Colorado Fax: 888-406-1360
To Owner:	Crested Butte Fire Protection District~~Nicole O'Connor~~ PO Box 10093~~972~~ Crested Butte, CO 81224
To Subsequent Owners:	At the address maintained in the records of the Gunnison County Assessor's office

v. Whenever possible, each provision of these Restrictions and any other related document shall be interpreted in such manner as to be valid under applicable law; but if any provision of these Restrictions shall be invalid or prohibited under said applicable law, such provisions shall be ineffective to the extent of such invalidity or prohibition, without invalidating the remaining provisions of such document.

vi. These Restrictions and each and every related document is to be governed and construed in accordance with the laws of the State of Colorado.

vii. Except as otherwise provided herein, the provisions and covenants contained herein shall inure to and be binding upon the heirs, successors, and assigns of the parties.

viii. Owners and subsequent owners agree that he or she shall be personally liable for their participation in any of the transactions contemplated herein and that he or she will execute such further documents and take such further actions as may be reasonably

required to carry out the provisions and intent of these Restrictions or any agreement or document relating hereto or entered into in connection herewith.

ix. Any modifications of these Restrictions shall be effective only when made by a duly executed instrument by the Beneficiaries and an Owner and recorded with the Clerk and Recorder of Gunnison County, Colorado. Notwithstanding the foregoing, the Parties agree that the Beneficiaries may amend these Restrictions where deemed necessary to effectuate the purpose and intent of these Restrictions, so long as both Beneficiaries agree to such amendments.

EXECUTED, this _____ day of _____, 20_____.

GUNNISON VALLEY REGIONAL HOUSING AUTHORITY

By:_____
_____, Executive Director

State of Colorado)
) ss.
County of Gunnison)

The foregoing Gunnison Valley Regional Housing Authority Affordable Housing Deed Restriction for been acknowledged before me this ____ day of _____, 2023~~1~~ by _____, Executive Director of the Gunnison Valley Regional Housing Authority

Witness my hand and official seal.
My commission expires:

_____
Notary Public

BOARD OF COUNTY COMMISSIONERS
OF GUNNISON COUNTY, COLORADO

By: _____
Matthew Birnie, County Manager

ATTEST:

_____
Deputy County Clerk

Crested Butte Transportation & Mobility Plan

Phase One Summary

Crested Butte's Existing Mobility Conditions

May 2023

About this plan

The Crested Butte Transportation & Mobility Plan will create a roadmap for the Town of Crested Butte to **de-emphasize cars and focus on walking, biking, and transit.**

This endeavor stems directly from the Crested Butte Community Compass, the Town of Crested Butte's comprehensive plan and 5-year strategic plan. Together as a community, **we are embarking on a process of understanding Crested Butte's existing mobility conditions and challenges. This plan will collaboratively identify and vet solutions for Crested Butte to achieve its mobility goals over the coming years.**

How is this plan being developed?

Phase One: Understanding CB's existing mobility conditions
(January – April)

How do our community and visitors move into and through Crested Butte? This first phase focused on collecting and analyzing data to better understand Crested Butte's existing mobility conditions. **This summary document highlights key data and initial challenges to think about as we move through this process.**

Phase Two: Identifying challenges & opportunities
(May – July)

What are Crested Butte's biggest mobility challenges and what are our opportunities to address them? Through an open house, workshop series, and broad community engagement, we'll take what we learn from Phase One and identify alternative solutions to consider. Check out the last page of this document to learn how to engage.

Phase Three: Drafting and refining the plan
(August – November)

In the final phase, the draft roadmap will come together by synthesizing recommended infrastructure improvements, policy considerations, investment opportunities, and potential programs to help Crested Butte meet its goal of de-emphasizing cars and focusing on walking, biking, and transit. An advisory committee will be recruited from previous phases to help improve the draft plan, along with a community feedback period to ensure the final plan is supported by the Crested Butte community.

Photos by Nolan Blunck

What's inside this summary

This document summarizes Crested Butte's existing mobility conditions, key takeaways, and initial challenges, broken down by the following categories:

Travel Patterns
How do our community and visitors travel into and throughout Crested Butte?

Traffic
How much traffic travels through Crested Butte's street network, how fast are they going, and what challenges might we foresee in the future?

Walkability
How can walkability be assessed and how walkable and bikeable is Crested Butte today?

Parking & Land Use
How much parking does Crested Butte have? How is it regulated, managed, and utilized?

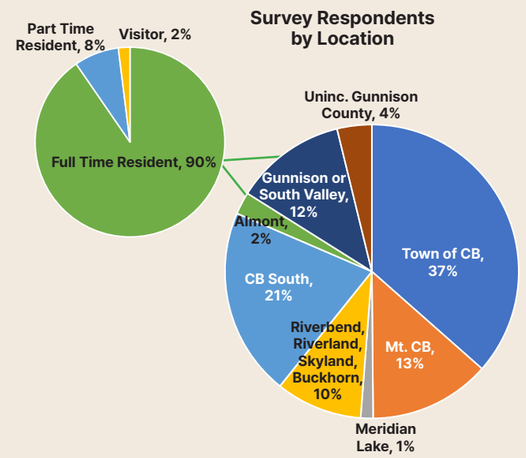
Transit
What is the reach and ridership of Crested Butte's transit services? What might encourage our community to utilize the bus more often?

Data Sources

This summary uses data from Streetlight (a transportation software that analyzes cell phone data), which is correlated to existing Town and CDOT speed and volume data. The Town also worked with Kimley Horn, a traffic engineering firm, to conduct a corridor analysis for Sixth Street. This summary also pulls data from parking studies conducted by the Town in 2018, 2020, 2021, and 2023 in partnership with Interstate Parking. Historic ridership data from Mountain Express and the Gunnison Valley RTA was provided by the Town's transit partners. Additional sources include the Town's GIS data and Town code.

Lastly, this summary includes data from the **Community Mobility Survey,** which collected mobility data from our community during Phase One. In total, the survey received 406 completed responses, comprising community members from the Gunnison Valley and visitors from the following locations:

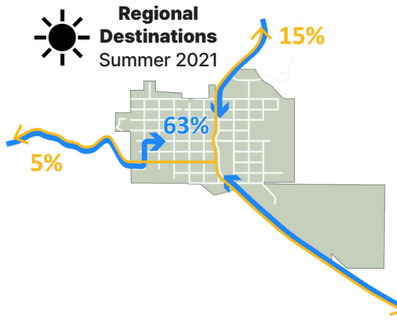
While this summary contains the highlights of Crested Butte's existing mobility conditions, visit the Crested Butte Transportation & Mobility Plan website to view the full survey results.

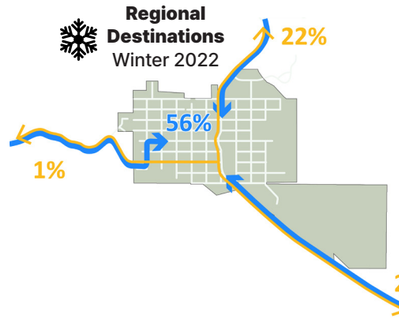


How we move... TRAVEL PATTERNS

Crested Butte's regional context

The Town of Crested Butte is the primary activity hub of the north Gunnison valley. During the summer seasons, 63% of all regional trips have a destination within the Town, while trips passing through Town equal 37%, including traveling to Mt. Crested Butte and areas north (15%), Kebler Pass and areas west (5%), or areas south of Town (17%).





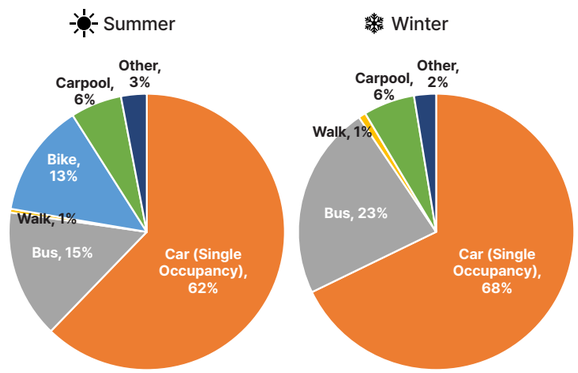
The mobility survey showed that Gunnison Valley residents typically travel into Crested Butte on a daily basis for work. Additionally, many residents travel into the Town on a weekly basis to go to the post office, dine, buy groceries, and for recreation and entertainment. Many of these activities are currently only available in the north valley within the Town.

During the winter, regional trips destined to Crested Butte reduce to 56%, while travel north to Mt. Crested Butte rises, indicating 7% more trips travel through the Town to head to the ski resort.

How do travelers enter the Town? Across responses from different areas of the Gunnison Valley, when asked how travelers typically enter the Town, the majority of respondents (ranging from 52% - 70%) drive a single occupancy car into the Town.

KEY TAKEAWAY: Crested Butte is the primary hub of activity within the North valley. But, a third or more of travelers move through the Town to the areas north, west, and south. Understanding opportunities to accomodate trips in different modes of travel into the Town and through the Town, in both summer and winter, will be important context for this plan.

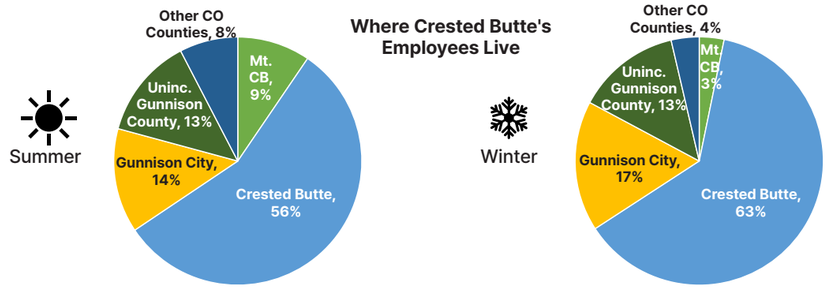
How do Gunnison Valley residents travel into Crested Butte?



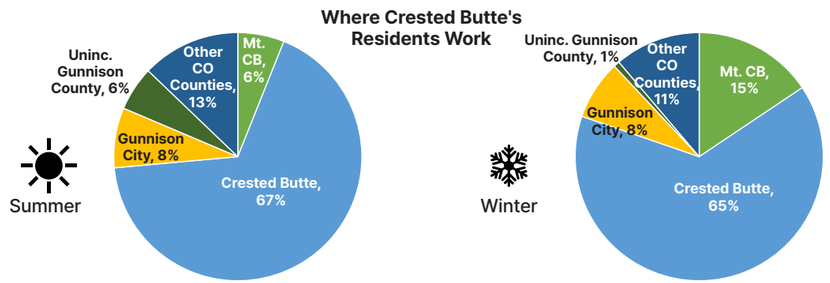
Where we work (and where we live)

Commuting to work represents the largest share of an individual's mobility patterns, and travel to work typically peaks during the same times of day. Connecting where people work to where they live is an essential component of a mobility strategy.

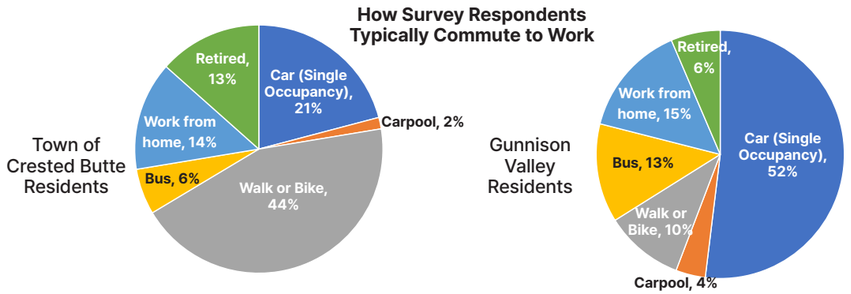
Where do Crested Butte's employees live? While a slight majority of employees working in Crested Butte live within the Town (56% in summer, 63% in winter), over one third of employees commute into Town from elsewhere in the Gunnison Valley.



Where do Crested Butte's residents work? About 65% of Crested Butte's residents work within the Town.



How do we get to work? In the mobility survey, we learned that almost half of Town residents (44%) walk or bike to work, while 52% of non-town residents drive a single occupancy car to work. Only 6% of Town residents and 14% of non-Town residents take transit to work.

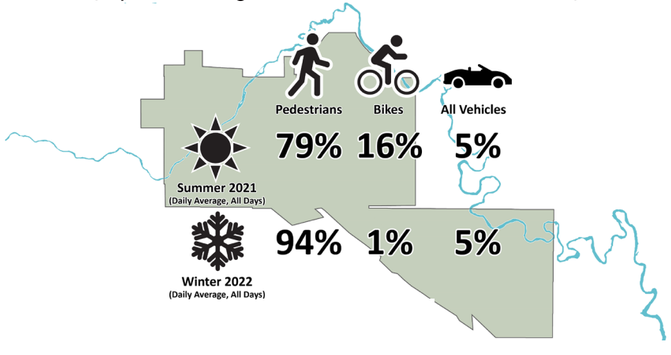


KEY TAKEAWAY: A significant portion of Crested Butte's workforce lives outside of the Town. It's critical to look at how to both facilitate opportunities to travel to work outside of driving a car, while increasing housing opportunities for the workforce closer to where they live.

How we move within Crested Butte

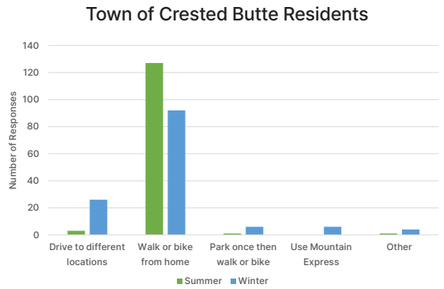
While the majority of non-Town residents indicated in the survey that they drive into the Town, when looking at how people move around within Crested Butte, Crested Butte residents predominantly walk and bike to destinations within the Town. For all trips that have an origin and destination within the Town, pedestrian travel dominates (79% in the summer and 94% in the winter), followed by bike travel in the summer (16%).

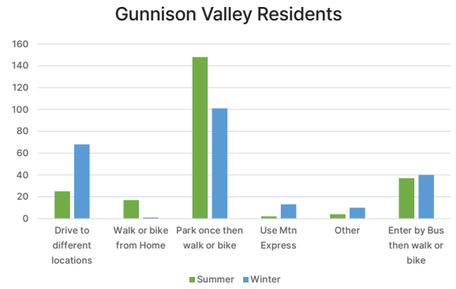
Town Mode Split
(Trips with an origin and desination within Crested Butte)



We asked in the survey how you typically move throughout the Town once you have already arrived. We learned from Town residents that they typically walk or bike from home, while the majority of Gunnison Valley residents park once and walk to different locations.

How do Gunnison Valley residents travel within Crested Butte?





KEY TAKEAWAY: Once inside Crested Butte, the majority of Town residents walk or bike to different locations.

What might encourage you to walk or bike more?

Many people already choose to walk or bike around Crested Butte once inside the Town, how can pedestrian or bike trips continue to increase? We asked you in the mobility survey what might encourage you to walk/bike more, and here's what we heard:

KEY TAKEAWAY: Improving connectivity between communities, whether through transit or recreation paths could encourage different modes of travel. Additionally, seasonality of travel is important, as winter conditions and ice make walking and biking more challenging.

From the Experts

Check out the webinar series on the Town's website to learn best practices about:

Navigating change: implementing a community mobility vision with Stephen Stansbery

CHALLENGE QUESTIONS

During Phase Two, The Town will challenge our community to identify and think through solutions to the following challenge questions. Whether participating in a workshop, adding to the mobility concerns map, or participating in the "think tank" campaign, no idea will be flushed!

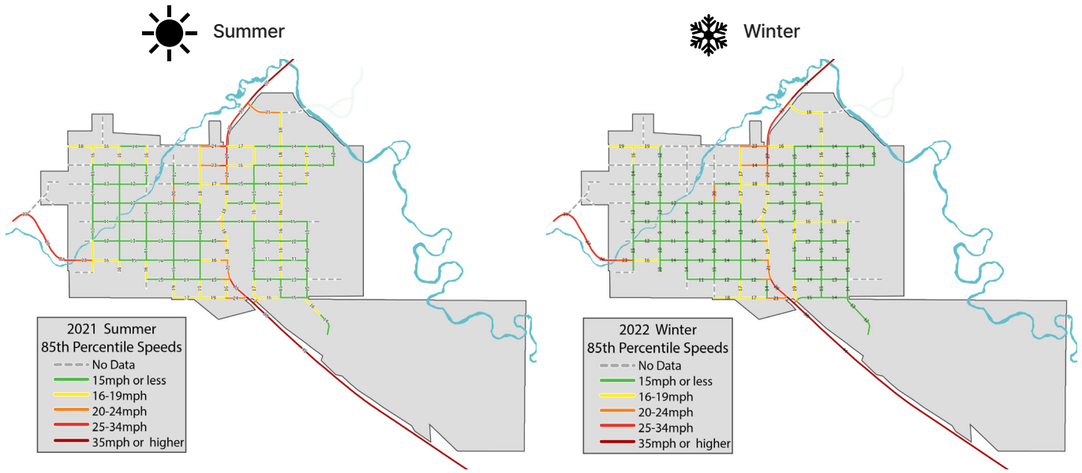
How will getting people to live closer to where they work impact transportation?

How can the Town encourage transit, walking, or biking into the Town?

How can the Town promote alternative modes of travel in the winter seasons?

Traffic speeds

SLOW DOWN!...We've all heard that shouted at some point in Crested Butte. But how fast do cars travel through Town? The maps below show the 85th percentile of speeds on each street, broken down by summer and winter travel. Speed data shows that Crested Butte's streets are generally compliant with the 15 mph speed limit, while higher speeds are experienced at the entrances and exits of the Town.



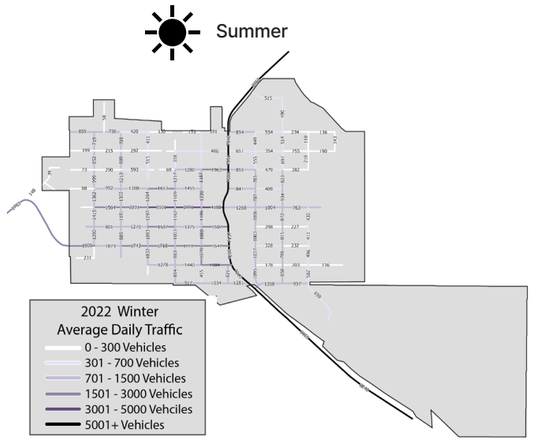
Safety vs. Comfort: While the majority of streets experience most cars complying with the speed limit, one bad experience can stick with us forever. While Crested Butte's streets are considered safe from a data perspective, understanding experiences of pedestrians and cyclists will be important as challenges and opportunities are identified.

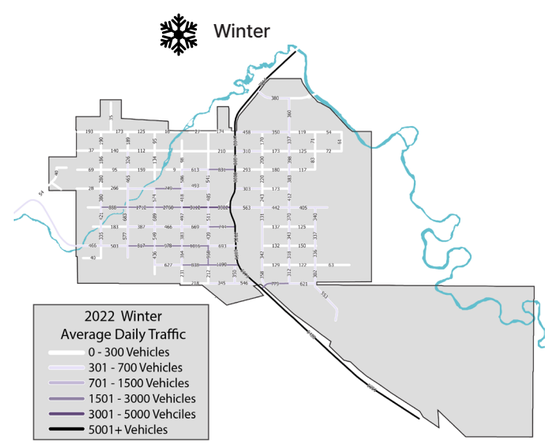
Traffic Calming: The Town has experimented in the past, and recently in the past few summers, with temporary traffic calming measures utilizing flower boxes. Love them or hate them, the flower boxes reduced the 85 percentile speeds by 2 mph on the streets they were deployed (Maroon, Sopris, and Whiterock). Additionally, the dining parklets on Elk resulted in compliance with the temporary 10 mph speed limit.

KEY TAKEAWAY: Crested Butte's streets are generally safe and compliant with the 15 mph speed limit, but improving comfort for pedestrians and cyclists will be important in this plan. Additionally, speeds on the Town's gateway highways, Kebler Pass and HWY 135, are challenged by topography. The Town, Gunnison County, and CDOT will need to consider traffic calming these highways before traffic enters the Town.

Traffic volumes

Traffic speeds are only one part of the equation of a person's experience on the streets. The amount of traffic on a street can impact the feel of moving through different parts of Town. The maps below show average daily traffic on each street, broken down by summer and winter travel.





Flexing the network: After Sixth Street, Elk Avenue, Whiterock, and Belleview tend to share the largest burden of traffic, followed by Maroon and Sopris. Some areas of Town, particularly Butte Avenue and the Red Lady intersection traveling southbound, carry less cars on an average basis. Crested Butte's network generally provides great connectivity, but these two pinch points influence how cars travel through Sixth Street, the 4-Way, Elk Avenue, and the other busier streets in Town.

KEY TAKEAWAY: Volumes on streets can affect pedestrian comfort as much as speeds. Crested Butte has a great network, but a few points result in uneven volumes on different streets throughout Town.

Sixth Street Corridor Conditions

Sixth Street currently carries the most traffic in Crested Butte and that is expected to grow in future years. The maps below show the traffic level of service (LOS) at each intersection, as well as the anticipated queuing of cars, today and in 2045. LOS is categorized by the delay experienced at each intersection, shown in the accompanying table. The corridor analysis shows that the Belleview, 4-Way, and Gothic intersections will all reach a LOS F by 2045, where motorists will experience a 50 second or more delay.

Level of Service and Queuing on Sixth Street

Existing Traffic

Future Traffic (2045)

Traffic Level of Service (LOS) Definitions

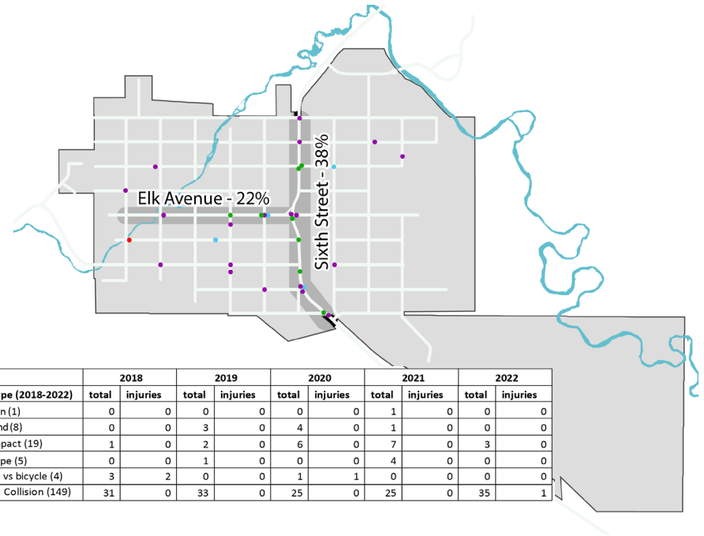
Level of Service (LOS)	Unsignalized Intersection Average Total Delay (sec/veh)
A	≤ 10
B	> 10 and ≤ 15
C	> 15 and ≤ 25
D	> 25 and ≤ 35
E	> 35 and ≤ 50
F	> 50

Intersection Comfort: Not only will motorists experience delays, but waiting at an intersection can result in rushed decisions and poor driver behavior when it comes to vehicle collisions and accounting for pedestrians crossing the street. Walking or biking across the 4-way was raised as an uncomfortable experience during the winter walkability audit, particularly during busy times of travel.

KEY TAKEAWAY: The current traffic operations and streetscape of Sixth Street are not equipped to handle projected future traffic without experiencing significant congestion and increased safety concerns. New intersection solutions should be considered to account for both pedestrian/bicycle cross-ability, safety, and comfort, in addition to LOS.

Collisions

Crashes in Crested Butte over the past five years have primarily been parking collisions, while other types of vehicle crashes have mainly occurred in the Sixth Street and Elk Avenue Corridors. The map below shows crashes in the past five years, organized by type of crash.



	2018		2019		2020		2021		2022	
Crash Type (2018-2022)	total	injuries	total	injuries	total	injuries	total	injuries	total	injuries
Head-on (1)	0	0	0	0	0	0	1	0	0	0
Rear-end (8)	0	0	3	0	4	0	1	0	0	0
Side-Impact (19)	1	0	2	0	6	0	7	0	3	0
Sideswipe (5)	0	0	1	0	0	0	4	0	0	0
Vehicle vs bicycle (4)	3	2	0	0	1	1	0	0	0	0
Parking Collision (149)	31	0	33	0	25	0	25	0	35	1

KEY TAKEAWAY: Crested Butte has conflict points that could be improved, particularly in the Elk Avenue and Sixth Street corridors where traffic volumes are the highest. As for all of those parking crashes? There's not much to do to improve poor parking skills, aside from reducing vehicle trips throughout Town...

From the Experts

Check out the webinar series on the Town's website to learn best practices about:

Increasing safety through calmer streets with Jim Charlier

CHALLENGE QUESTIONS

How do you calm traffic to where pedestrians feel comfortable?

How can the Town improve circulation and use of Crested Butte's full street network?

What levels of traffic on each street is liveable?

How can Sixth Street be improved without dividing the Town? How can the flow and cross-ability and Sixth Street be ensured?

The pedestrian experience...WALKABILITY

How do you assess walkability?

Learning from the community: Crested Butte aims to focus on walking, biking, and transit, but how do you assess if the Town is walkable? Through this process, the Town is hosting two walkability audits, one of which occurred on a very snowy and wet day in March and the other is coming up on June 28.

A walkability audit is a review of the actual walking conditions of Crested Butte against established principles of what makes a truly walkable experience. The intent of the walkability audits is to bring together diverse perspectives with different experiences to allow people to see the environment from different points of view, help participants understand their many shared values, and focus attention on what's really happening on the ground.

This section provides an initial assessment of walkability (and townie-friendliness) of Crested Butte from observations from the winter walking audit, as well as the mobility concerns map, which has solicited feedback from the community at both the May 4th open house and online.

Principles of a walkable town: The following six principles are regularly utilized across the country to assess if an environment is walkable.

Accessible: A place that can be enjoyed by people of all mobility levels and ages.

Comfortable: A place that provides a feeling of personal security and safety and you can feel at ease with your surroundings.

Connected: A place that connects multiple routes to different activities and resources regardless of how you are traveling.

Convenient: A place that is easily understood by ensuring the walking environment provides visual and physical directness between destinations.

Engaging: a visually interesting place that allows residents and visitors of all ages to connect with each other and the surrounding environment.

Vibrant: A place that is full of life, energy, and enthusiasm.

KEY TAKEAWAY: When assessing walkability, it's important to remember that different ages in life, mobility abilities, perspectives, and individual comfort levels can impact each person's experience walking or biking around Crested Butte.

Additional winter challenges

To heat or not to heat? That is the question... Elk Avenue has a patchwork of heated and non-heated sidewalks. Businesses on Elk Avenue are required to remove and chip ice on the sidewalk in front of their business, but constant snow and melting result in ice buildup. The Town allows businesses to heat their sidewalk with a permit through the Renewable Energy Mitigation Program, which requires that heated sidewalk systems offset their energy use with on-site renewable energy or a payment in lieu.

But as you walk down Elk Avenue during the winter, have you noticed how the transitions between heated and non-heated areas build up into large ice dams? These sections become tripping and slipping hazards, are inaccessible for wheelchairs, and overall become unsafe. The winter walking audit and mobility map resulted in an observation that going forward, Elk Avenue would be more accessible and comfortable in the winter if the sidewalks were either all heated or not, which needs to be vetted through this plan.

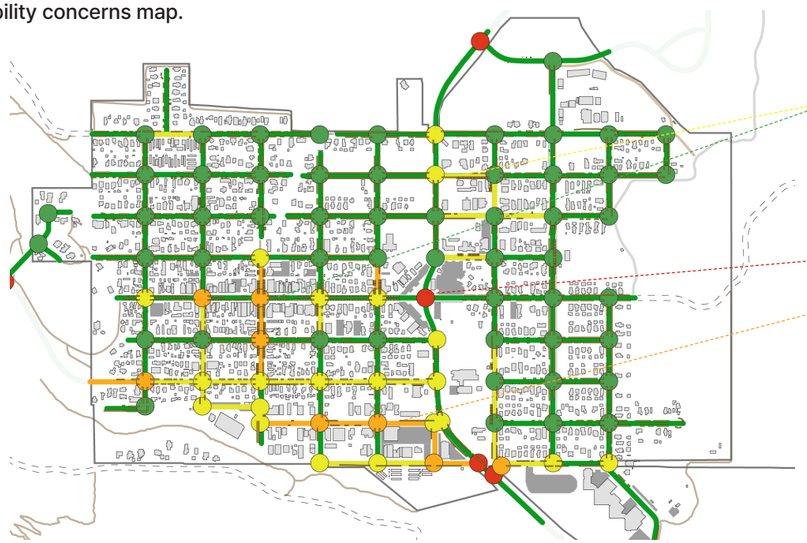
I can't see! This snowbank is taller than me! Crested Butte has a very unique snowbank removal policy on Elk Avenue, where the snowbanks are kept in place during the holiday season to add to the winter ambience of downtown. During the rest of winter, snowbanks are removed periodically on Elk, but they generally build up across Town, especially at intersections.

We all love the photos of the snowbanks being so tall that they nearly cover a stop sign, and the public works department tries to keep up with snow removal to ensure all signage is visible. However, large snowbanks at intersections lead to bad sightlines for drivers and pedestrians, resulting in vehicles creeping into intersections and crosswalks, and pedestrians creeping out into moving traffic just to be able to see. How can the Town better manage its snowbanks, with limited capacity, to improve safety and comfort at its intersections in the winter?

KEY TAKEAWAY: Crested Butte's winters add an extra challenge to walkability. Improving sightlines at intersections through adjusted snow removal practices and discussing whether to fully heat or not heat sidewalks are two solutions that will need to be considered.

Crested Butte's initial walkability assessment

While Crested Butte has an astonishingly high percentage of its trips in the form of walking (79% in summer and 94% in winter) and encouragingly low crash and injury rates, the Town is not entirely "walkable". Guided by the six principles of walkability, each roadway segment and intersection in Town are classified into four categories. These classifications will continue to be refined through further community engagement at the summer walking audit on June 28 and through the online mobility concerns map.

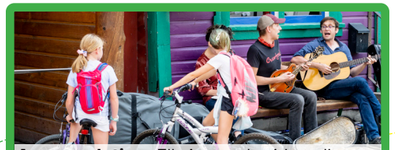


Accommodating
Green streets and intersections are in accomodating environments that encourage walking, the buildings are engaging the street (which prioritize pedestrian access), and there are few potential conflict points. The speed and volumes of vehicle traffic allow pedestrians to feel more at ease with their surroundings as sightlines for both the pedestrian and motorists are high.Pedestrians and motorists know pedestrians have the right of way.

Challenging
Yellow streets begin to experience a more challenging walking and biking experience. Buildings are less organized for pedestrian access and numerous driveways front the street. Higher volumes of traffic lead to challenges with feeling comfortable and accessible. Pedestrians need to be extra aware of cars backing up into the street that may not have the clearest sightlines.

Chaotic
Orange streets and intersections begin to feel chaotic between the disorganized physical environment and poor sightlines for vehicles and pedestrians. In these areas, drivers have a very difficult time seeing pedestrians, especially during periods of high travel. These orange areas result in numerous potential conflict points between cars, pedestrians, and bikes, making the walking experience feel chaotic where pedestrians do not feel they have the right of way.

Threatening
Red streets and intersections can feel threatening and treacherous to pedestrians. Red areas are located in auto-oriented environments where buildings retreat from the street and vehicular access is prioritized. These areas have poor sightlines for vehicles and pedestrians, where drivers' views of pedestrians are blocked by parked cars or snowbanks and pedestrians cannot see oncoming traffic, resulting in cars creeping into intersections. Additionally, high traffic volumes and congestion at intersections result in rushed decisions, making pedestrians crossing feel threatened or unsafe.



Accomodating: Elk Avenue's sidewalks and architecture are engaging for pedestrians,however, its interesections are more challening for pedestrians to be seen and to cross.

Challening: High amounts of driveways fronting the street result in pedestrians needing to be extra aware of cars backing up.

Chaotic: Higher amount of traffic combined with street facing parking on Belleview result in comfort challenges for pedestrians and cyclists.

Threatening: High volumes and congestion result in poor driver behavior and rushed decisions, making the 4-way a threatening intersection at times.

KEY TAKEAWAY: Crested Butte has several areas that can be improved to make the Town more walkable.Based on initial observations, key factors influencing street and intersection walkability ratings include:

1) Street facing driveways negatively impacting walking environment and isolating the pedestrian.

2) Poor sightlines at Intersections or crosswalks blocked by parked cars or high snowbanks.

3) Potential conflict points, particularly as traffic volumes increase and patience decreases.

The Town needs to be intentional on minimizing potential conflict points. Understanding the tradeoffs that might be needed to improve these conflict points will be an important community conversation in this planning process.

From the Experts

Check out the webinar series on the Town's website to learn best practices about:

What makes a walkable (and townie) friendly community? with Dan Burden

CHALLENGE QUESTIONS

How can walkability be improved in the Town in the winter season? What should the Town do about heated vs. non-heated sidewalks going forward?

Thinking about the six principles of walkability, which streets could be prioritized for walkability and bikeability improvements?

Crested Butte's parking supply

There are several parking spaces across Town, ranging from private residential parking to on-street parking and off-street surface lots. There are 2,616 on-street parking spaces within the Town, compared to 2,021 off-street private residential parking spaces. Those on street parking spaces are reduced overnight with Crested Butte's winter parking regulations, but in general, Crested Butte's on street parking is a significant public asset that is not currently being maximized outside of Elk Avenue.

Town Parking Facts

- **2,616** On-Street Parking Spaces
- **393** Off-Street Town Parking Spaces
- **488** Off-Street Surface Lot Parking Spaces

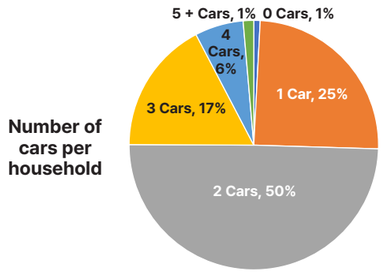
Did you know? There are 2,021 Off-Street Private Residential Parking Spaces Spaces (less than the amount of on-street parking spaces across the Town)

KEY TAKEAWAY: Crested Butte's on street parking spaces are an important public asset to consider leveraging as the Town manages and regulates parking in the future.

Town land use & parking

The Town currently requires the following number of parking spaces for different types of land use. The Town's parking regulations are based on national averages that use a formula to estimate how many cars different types of land uses generate. Best planning practices across the nation are revisiting how municipalities regulate parking, as parking is a significant cost driver for housing affordability and the single largest derminate of traffic generation in towns and cities.

How many cars do you own? We asked in the survey how many cars each household owns, with half of respondents owning two cars per household, while 25% own one.



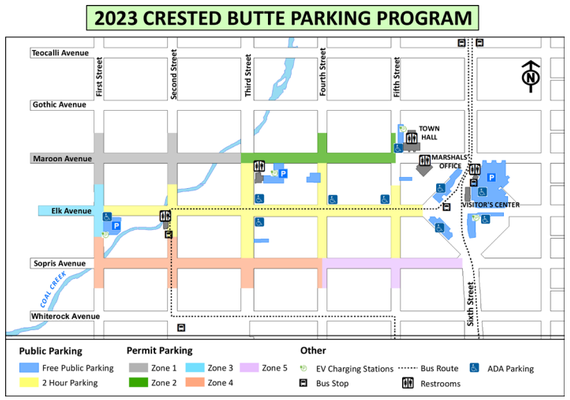
Town of Crested Butte Parking Regulations

Building Type	Required Parking
Single Family dwelling	• 2 spaces for 4 bedrooms or less • 1 space for a fifth bedroom • 1 space for every two bedrooms over 5
Two Family dwelling unit	• 4 spaces for 4 bedrooms or less • 5 spaces or 5 bedrooms • 1 space for every two bedrooms over 5
Three family and multi-family dwelling	• 1.5 spaces for each residential unit • 1 additional space for every unit with more than 2 bedrooms
Accessory Dwelling Units/Employee dwellings	• 1 space per 1 bed & studio units • 2 spaces for 2 & 3 bedroom units • 3 spaces for a 4 bedroom unit • 1 space for every two bedrooms over 5
Bed & Breakfast	• 1 Space per rental bedroom • 2 spaces for the owners quarters • 1 additional space for every 2 beds in excess of two beds per room
Hotel, lodge, motel	• 1 Space per rental bedroom • 2 spaces for the owners quarters • 1 additional space for every 2 beds in excess of two beds per room
Restaurant, club, bakery, distillery etc.	• 1 space for every 500sf of usable space up to 1000sf • 1 space for every 250sf of usable space from 1001sf to 2000sf • 1 space for every 100sf of usable space over 2001sf
Auto-related service	• 1 space for each 100sf of usable space
Mobile Homes	• 2 spaces per mobile home
Theatre, auditorium, and other fixed seat establishments	• 1 space for every 4 seats
Museum	• 1 space for every 1000sf of usable space
Dry Storage	• 1 for every 2000sf of storage building space
Churches	• 1 space for every 8 seats • 1 space for every 500sf of usable space outside the sanctuary

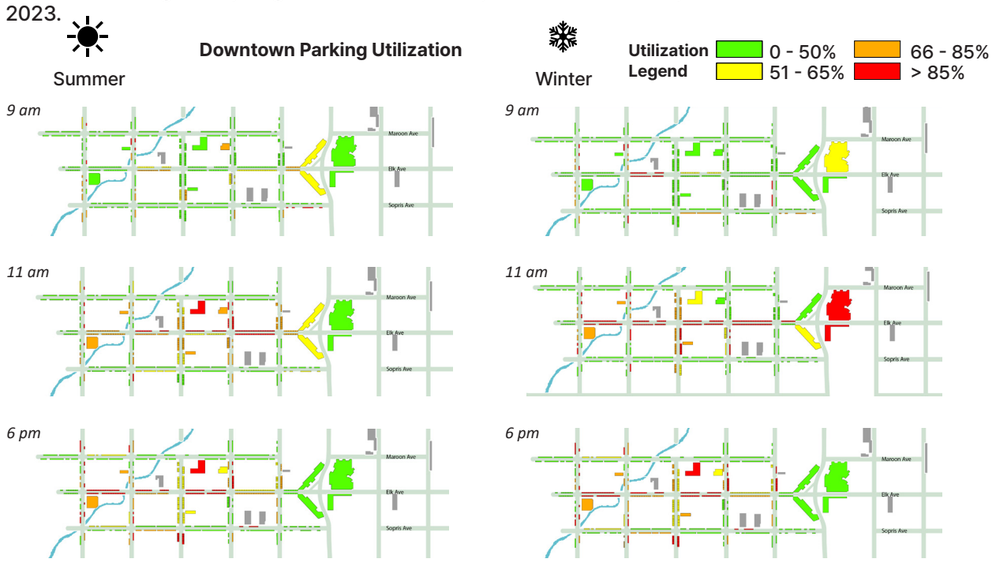
KEY TAKEAWAY: Crested Butte's parking regulations maintain parking minimums that are higher then average household vehicle ownership in Crested Butte. This coupled with the Town surplus of on-street parking represents an opportunity to for the Town to lower parking minimums and reduce the cost of development that would improve the affordability of new development, both market rate and deed-restricted.

Parking management and utilization

The Town started a parking management program in 2021, which enforces 2-hour pakring in the Elk Avenue corridor, along with free neighborhood parking permits for Maroon and Sopris Avenues. The Town also now enforces parking permits around the Center for the Arts during large events. The map below shows an overview of the current regulations.



In developing the parking management program, it was found that Crested Butte has plenty of available parking spaces, but everyone wanted to park as close as possible to their destination, particularly at Third and Elk. By enforcing time limits, the utilization of parking spaces on Elk Avenue was better distributed across the downtown area, making it possible to find a parking space at Third and Elk during different times of day. The map below shows parking utilization across Crested Butte's downtown during a busy August 2021 summer day and on the saturday of president's weekend in 2023.

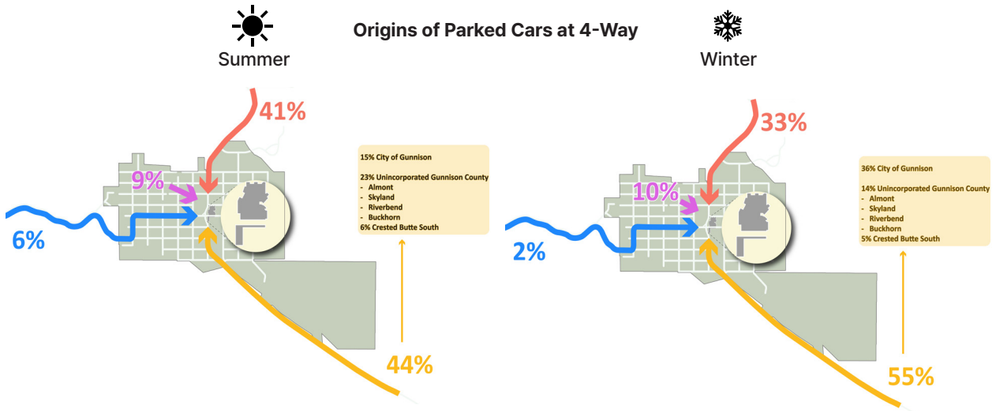


KEY TAKEAWAY: Crested Butte has plenty of available parking. Time limits combined with parking permits can spread utilization of available parking across a larger area.

Who is parking at the 4-Way?

The 4-Way parking lot is a key mobility destination in Crested Butte. During the summer, the 4-Way can act as a trailhead to the trails surrounding Crested Butte. During the winter, many utilize the 4-Way to catch Mountain Express to the ski area. This past winter, the 4-Way parking lot was above 85% full during mid-day weekend winter days.

But who is parking there? The maps below show that almost half (44% summer, 55% winter) of parked cars are coming from the southern Gunnison Valley (Gunnison, Unincorporated Gunnison County, and Crested Butte South). Interestingly, 9-10% of parked cars are Town of Crested Butte residents, indicating that current transit coverage isn't providing service in close enough proximity to those 10% of residents' homes.



KEY TAKEAWAY: Town residents parking at the 4-way indicate connectivity to transit could be improved within the Town. Additionally, the 4-way is currently serving as an intercept lot to the ski resort and the community will need to determine if that's the most effective use of that space.

From the Experts

Check out the webinar series on the Town's website to learn best practices about:

Parking in livable communities with Crissy Fanganello

CHALLENGE QUESTIONS

How should the Town of Crested Butte regulate parking for new developments?

Should on-street parking play a role in the Town's regulations?

Should Crested Butte expand its parking management throughout Town?

How could parking management influence higher transit ridership or walking/ biking throughout the Town?

What should the role of Crested Butte's surface parking lots be in the future?

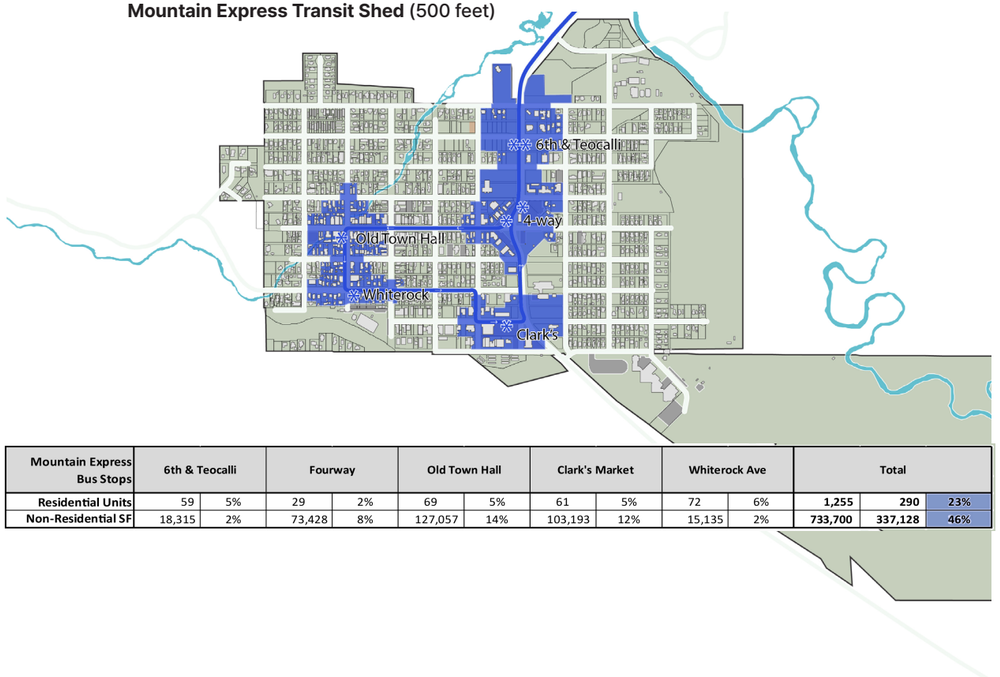
Wheels on the bus... TRANSIT

Mountain Express service area & ridership

Service Area: Mountain Express was originally founded to connect visitors and the community from the ski resort in Mt. Crested Butte to the dining and entertainment options on Elk Avenue. Their service route remains true to this mission and focuses on circulating through Elk Avenue and Sixth Street.

National best practices on transit suggest that 500 feet is a distance someone is willing to walk to a bus stop with local service. The map below shows the areas served within this buffer at each Mountain Express bus stop. Additionally, the table below shows how many residential units, as well as square footage of commercial space, that is served by each stop. When compared as a percentage of Town, the current Mountain Express bus stops reach 23% of the Town's residential units and almost half (46%) of the Town's commercial square footage, which could be correlated to why 10% of cars using the 4-way parking lot are driving from within the Town.

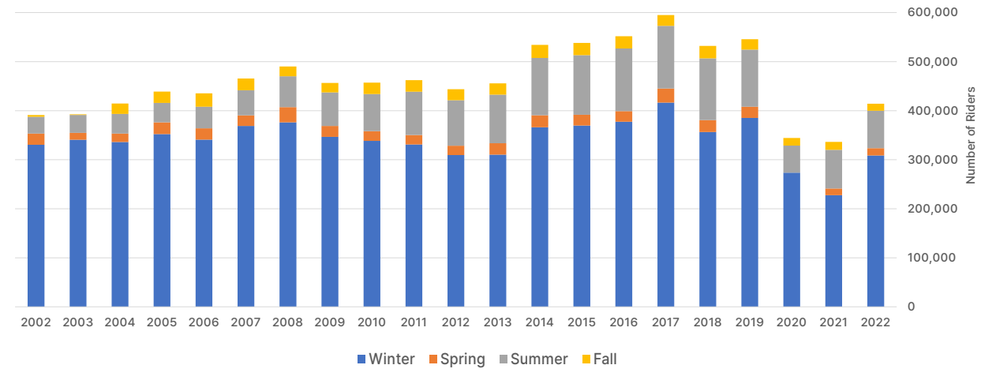
Mountain Express Transit Shed (500 feet)



Mountain Express Bus Stops	6th & Teocalli		Fourway		Old Town Hall		Clark's Market		Whiterock Ave		Total		
Residential Units	59	5%	29	2%	69	5%	61	5%	72	6%	**1,255**	**290**	23%
Non-Residential SF	18,315	2%	73,428	8%	127,057	14%	103,193	12%	15,135	2%	**733,700**	**337,128**	46%

Ridership: The following graph shows Mountain Express ridership for the past twenty years, broken down by season. Mountain Express ridership has remained relatively flat and is still experiencing decreased levels since the pandemic. Ridership is also consistently higher in the winter seasons. Correlating ridership levels with the mobility survey results, it can be interpreted that this service is mostly used to access the ski resort in the winter.

Mountain Express Ridership since 2022 (by season)

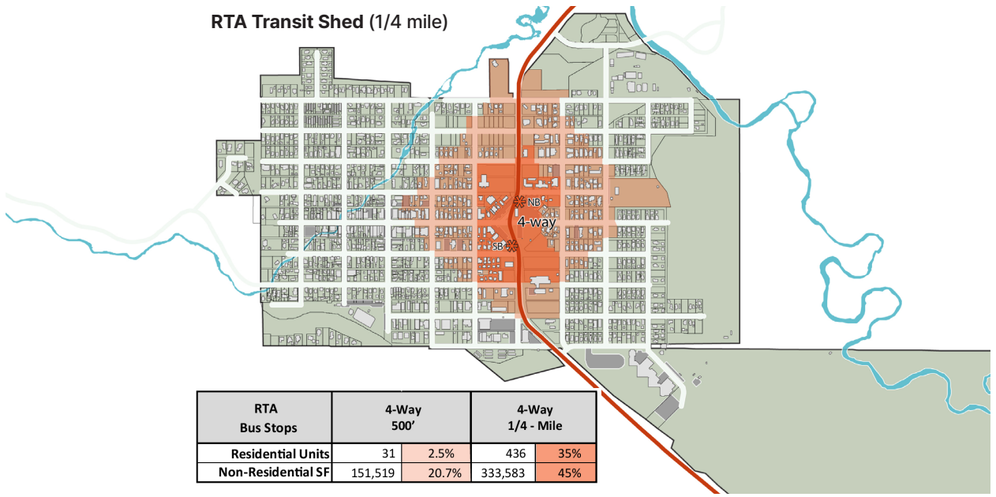


KEY TAKEAWAY: Mountain Express is effectively serving the need of connecting the ski resort to Elk Avenue. However, it is not currently serving the residents or other commercial areas of the Town when it comes to efficient and easy service. It is likely their ridership will remain consistent if it continues with its current service area and schedule.

RTA service area & ridership

Service Area: While 500 feet is the typical distance someone is willing to walk to a bus stop for local service, when it comes to commuter service, travelers may walk up to a quarter mile. The Gunnison Valley RTA was formed as a regional commuter service for the Gunnison Valley. The map below shows what areas are served within these distances at the RTA stops within the Town. Using this buffer, the RTA serves 35% of residential units and almost half (45%) of commercial areas in the Town.

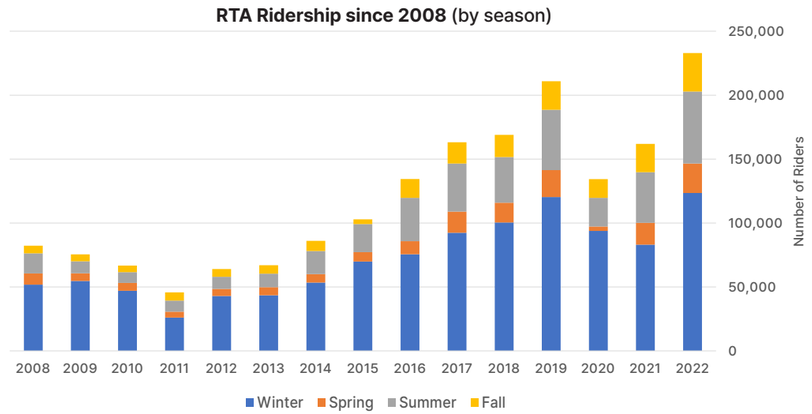
RTA Transit Shed (1/4 mile)



RTA Bus Stops	4-Way 500'		4-Way 1/4 - Mile	
Residential Units	31	2.5%	436	35%
Non-Residential SF	151,519	20.7%	333,583	45%

Ridership: The following graph shows RTA ridership since 2008, broken down by season. While RTA did experience a dip with COVID in 2020 and 2021, overall, their ridership has consistently increased each year, which is attributed to the increase in service frequency. The RTA is currently planning to increase their routes to 40 trips next winter. The RTA is also most used in the winter, but is seeing ridership grow in the other seasons.

RTA Ridership since 2008 (by season)



KEY TAKEAWAY: The RTA serves as a critical regional connector, particularly for commuting. This service will play an important role Crested Butte's regional role and how people enter the Town of Crested Butte.

What might encourage you to ride the bus more?

In order to be well utilized, transit needs to be easy, free, and convenient. While already free, we asked you in the mobility survey what might encourage you to take transit more. Most respondents indicated they already ride the bus a lot, but we also heard that improved bus shelters, increased bike capacity, more frequent service, and dog friendly opportunities for the RTA could encourage our community to utilize transit more.

KEY TAKEAWAY: Our community already loves and utilizes our local transit services, but by improving the service areas, schedules, and experience, these systems could be leveraged to improve how people move through the region and Crested Butte.

From the Experts

Check out the webinar series on the Town's website to learn about best practices about:

21st century transit in mountain communities with Carlos Hernandez

CHALLENGE QUESTIONS

How can Mountain Express serve other functions besides connecting the ski area with Elk Avenue? Are other technologies needed to change the paradigm?

How can the RTA continue to grow and be used more often to enter Crested Butte?

What improvements could help transit be utilized more year-round?

What role does transit play in helping people move within Crested Butte ?

What's next?

Now that it's Phase Two, it's time to learn from Crested Butte's existing mobility conditions and identify opportunities to solve these challenges and meet the Town's goal of de-emphasizing cars and focusing on walking, biking, and transit.

Please consider engaging in the Transportation & Mobility Plan through the various opportunities below, and visit www.crestedbutte-co.gov/getinvolved to stay up to date on the latest updates.

Mobility Concerns Map: While this summary provided an overview of Crested Butte's overarching mobility challenges, we want to hear from you on what specific areas you see challenges and issues with moving around. Please add your points of concern the digital Mobility Concerns Map at this link. The map will be open through July.

Challenge Questions Think Tank: Be on the lookout through public restroom stalls throughout Town to ponder your answers to the challenge questions posed in this document. Please share your ideas and answers at transportation@crestedbutte-co.gov. The Think Tank will be open through July and no idea will be flushed!

Focus Area Workshops: The Town is looking forward to convening diverse perspectives for a series of focus area workshops to roll up our sleeves on these challenge questions and brainstorm solutions. Thank you to those who have signed up to participate and be on the lookout for summaries of each workshop towards the end of this phase. Topics include:

1. Traffic Circulation & Calming
2. Transit Improvements
3. Pedestrian & Bicycle Experience
4. Sixth Street and Elk Avenue's Streetscapes
5. Parking & Land Use
6. Regional Collaboration Retreat

Walkability Audit: Join Town Staff on Wednesday, June 28 from 3 – 5 pm for a summer walkability audit to share your and others' mobility experiences moving around Crested Butte.

CNU REPORT

Saving Lives, Time, Money: Building Better Streets

New Urbanists, Fire Marshals Find Common Ground

The Congress for the New Urbanism (CNU), U.S. Environmental Protection Agency (EPA), and fire marshals from across the country have partnered together on an Emergency Response & Street Design Initiative. This initiative is aimed at reconciling the growing desire for appropriately-sized and connected streets with emergency responders' access needs. We believe common ground exists for solutions because streets in connected networks:

•Can improve emergency response times by providing several routes to any given address.

•Are safer for pedestrians, drivers, and emergency responders since they calm traffic below speeds that more likely result in fatal or serious injury collisions.

Residential streets like this 28-foot wide example in Prospect New Town in Longmont, Colo., are a staple of New Urbanism, but are often hindered by the International Fire Code's 20-foot clear rule. Properly designed, and in connected networks, these streets actually help emergency response times and calm traffic. (Photo courtesy of CNU)

Narrower streets in well-connected networks also help reduce stormwater runoff, require less energy to construct, and facilitate non-greenhouse emitting transportation alternatives like walking and bicycling.

Abundant literature supporting these findings exists in academia, municipal reports and the work of Local Government Commission, a non-profit dedicated to helping local leaders and elected officials create healthy, walkable communities. An annotated bibliography provides a summary of current findings and is available at the Initiative's web page: cnu.org/emergencyresponse.

Traditional, connected streets are sustainable, viable alternatives to sprawling, wide road systems that encourage people to drive everywhere for everything. As the United States responds to the potential dangers of global climate change and the urgent need to reduce vehicle miles traveled to mitigate that threat, bringing back connected street patterns can help reduce energy consumption and carbon dioxide emissions.

Moreover, the demographic trends of the 1990s and this decade, which saw both young professionals and empty nesters migrating into cities, suggest growing demand for urban living. In response, the initiative partners are developing cutting-edge solutions for street designs that reduce emergency response times and improve community safety.

Over the past 40 years, the fire service has done a tremendous job reducing fire-related civilian deaths in the U.S. – from 7,395 in 1977 to 3,430 in 2007 according to the National Fire Protection Association. The majority of emergency calls are not related to fire, but rather to calls for medical or traffic injuries. In 2007, the National Highway Traffic Safety Administration reported that traffic collisions killed 41,059 and injured 2,491,000 people.

The Emergency Response & Street Design Initiative aims to achieve reductions in traffic injuries and deaths through better street design.

Origin of the Problem

As suburbs mushroomed and spread after World War II, the traditional, connected street grid network was

BUILDING page 2

Fire Officials, Urbanists Connect on Streets

Connectivity is Common Ground for Solutions

As we moved away from traditional development patterns, two major things happened to our streets: they became wider and the level of connectivity decreased.

Recent studies have shown that wider streets are associated with more traffic injuries and fatalities—leading to an increase for emergency response services. And at the same time, reduced connectivity has increased local fiscal burdens as each fire station is able to serve fewer and fewer households as homes sprawl across the landscape.

In their quest for better, more efficient public safety, new urbanists and fire marshals can learn from each other. New urbanists and smart growth advocates, guided by the Charter of the New Urbanism, call for compact, pedestrian-friendly, and mixed-use neighborhoods with interconnected networks of streets that promote alternatives to driving. Whether they're lined with bungalows with front porches, or shops and sidewalk cafes, traditional streets create an outdoor space that works well for drivers and pedestrians. They create lasting economic value and improve a community's quality of life.

But our desire for modestly-sized streets stems as much from public safety concerns as walkability. Properly designed and placed in connected networks, they reduce collision injuries and increase emergency access to a given address. And at the core of the emergency response profession is the goal of reducing injuries through effective response times and conditions. Ideally, fire trucks should get to locations in their station area within five minutes. They need to move down streets efficiently. Since highly interconnected street networks offer many routes to most places, emergency personnel have a better opportunity to find the most direct and unimpeded route possible.

As you will see in these pages, there are many pieces to this puzzle and much

common ground between new urbanists and fire marshals. The Emergency Response and Street Design Initiative lets us search together for mutually acceptable and beneficial street design solutions.

John Norquist, President & CEO

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BUILDING continued

discarded in favor of cul-de-sacs and sprawling roads whose widths and parking restrictions easily accommodated fire apparatus of any size, even as their limited subdivision entries and cul-de-sacs increased the distance emergency responders needed to travel to reach their destinations.

As the consequences of sprawl became apparent, New Urbanism emerged during the 1980s to re-establish traditional, human-scaled neighborhood design including elements such as mixed-use buildings and streets that meet the needs of pedestrians and transit riders. Streets built for vehicles, pedestrians, cyclists, and transit with connections to the larger community are healthier alternatives to subdivisions, strip malls and office parks that stand isolated from each other and surrounding uses. Because they strengthen community bonds, improve quality of life, and are the building blocks of sustainable communities and regions, New Urbanist neighborhoods are holding their value much better than conventional subdivisions in the current economic downturn.

But as New Urbanism spread, the "20 foot clear" provision of the International Fire Code, which has been part of national fire codes since 1976, remained. The provision, which requires "an unobstructed width of not less than 20 feet" on designated fire access roads, vexes developers, planners, and engineers since it is commonly interpreted to force some streets to be wider than necessary

BUILDING page 12

What We're Doing and Why

The Emergency Response & Street Design Initiative brings together fire code officials, new urbanists and the U.S. EPA to find ways of accommodating traditional urban streets and emergency responders' needs for quick and ready access to a given address.

Our goal is providing streets that work for everyone – pedestrians, drivers, and emergency responders – and that reflect the principles of sustainable neighborhood design and public safety alike.

Working together, CNU, the EPA, and emergency responders will accomplish this in three main ways: new fire code language, research linking street design and public health, and aggressive education and outreach to build partnerships between new urbanists and emergency responders.

Code Changes

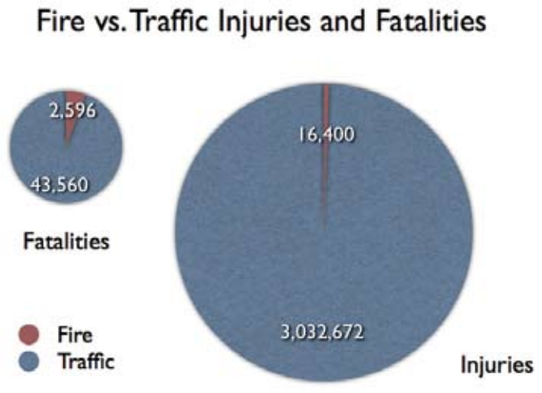
The Initiative team has developed proposed amendments to Chapter 503 of the International Fire Code that will empower local fire code officials to be more flexible, under specific circumstances, regarding the standard that currently requires street widths to include at least 20 feet of unobstructed space. The team also proposed a new appendix to the code, and a commentary explaining those circumstances. The International Code Council's code amendment process will continue through 2009 and 2010. We invite you to offer comment to the ICC on our proposed changes. For more information, please visit the Initiative's web page, www.cnu.org/emergencyresponse.

Street Design & Public Health

CNU and the Centers for Disease Control – which has already identified transportation injuries as a public health problem – are exploring the relationships between street design, traffic injuries, and public health/public safety, and how the organizations can work together in finding solutions to this problem.

Educating everyone about these interconnected factors dovetails with the Initiative's effort to teach new urbanists and fire code officials more about each other's professions, outlooks, and approaches to street design.

Through these approaches, we hope to improve the quality of the built environment and emergency service. We hope you will agree, and join us in this endeavor. Please see the "Get Involved" section of this Report on Page 13 for more information.



While traffic and fire deaths are equally tragic, fire-related injuries and deaths are a small portion of the overall number of accidents in the United States. In 2007 (the latest year for which statistics were available), the number of traffic-related injuries and fatalities nationwide far outpaced those from fires. (Chart courtesy of Peter Swift)

Shared Values for Traditional Urban Streets and Emergency Response

This list was created by during the CNU Streets and Emergency Response Workshop, held in April 2008, in Austin, Texas.

1. Life safety is important, should be inclusive, and extend from fire to traffic.

2. We value the efficient use of resources, including property, services, and infrastructure.

3. We value vibrant places that enhance pedestrian activity.

4. We value communities that include a range of neighborhoods and compatible uses.

5. We value streets, structures, and fire protection features that match the context of the neighborhood.

6. We value creative collaboration among those who serve and shape the built environment.

7. We value an ongoing process of education and capacity-building among those who serve and shape the built environment.

8. We value adaptation in life saving responses due to regional differences.

(Photo courtesy of LouAngeli2008, via Flickr under a Creative Commons license)

Traditional Streets are Safer

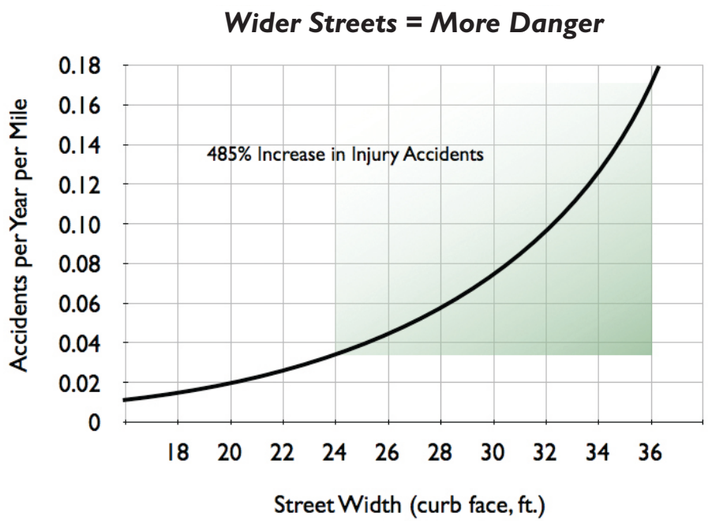
Slower Speeds, Fewer Collisions

Traditional streets improve public safety by guiding motorists to drive at appropriate speeds. Slower drivers are much less likely to strike cyclists and pedestrians at speeds capable of causing severe injury or death – facts compelling new urbanists' desires to construct them in mixed-use neighborhoods.

The 1997 Swift-Painter-Goldstein study of Longmont, Colo., analyzed 20,000 police accident reports based on five criteria to determine how street design impacted collisions. It found "the most significant relationship to injury accidents" was street width. "As street widths widen, accidents per mile per year increases exponentially, and the safest residential street width are the narrowest (curb face)."

The Longmont analysis, and the studies it cites (from 1976 and 1981), all correlated wider streets with higher speeds. The 1997 study concluded, "Clear relationships are evident between accident frequency and street width. The findings support the premise that narrower, so-called 'skinny' streets, are safer than standard width local streets." The study also noted

Harbor Town in Memphis, Tenn., serves pedestrians, traffic, and emergency responders. The developer won strong support from the fire department by working early and often to identify and solve potential access problems like turning radii at intersections. Harbor Town won a prestigious Charter Award from CNU in 2007. (Photo courtesy of Looney Ricks Kiss Architects and RTKL)



The Swift-Painter-Goldstein study of traffic accidents in Longmont, Colo., revealed a 485 percent increase in accident rates per year per mile as street widths increased from 24 feet to 36 feet. (Chart courtesy of Peter Swift)

"narrow streets should not be used without at least a second means of access. This can be accomplished with alleys and/or an interconnected network of streets."

"Speed is the defining factor of a safe street – reduce the speed and you reduce the frequency and severity of collisions."

Eric Dumbaugh, a professor at Texas A&M University's Department of Landscape Architecture and Urban Planning, states that the design of the road communicates what is expected of a driver, especially when it comes to speed. Speed is the defining factor of a safe street – reduce the speed and you reduce the frequency and severity of collisions. There are many design factors that inform drivers of the appropriate speed—some of them are commonly misunderstood, like shorter sight distances reducing speeds, which cuts against the grain of conventional traffic engineering thinking in the U.S.

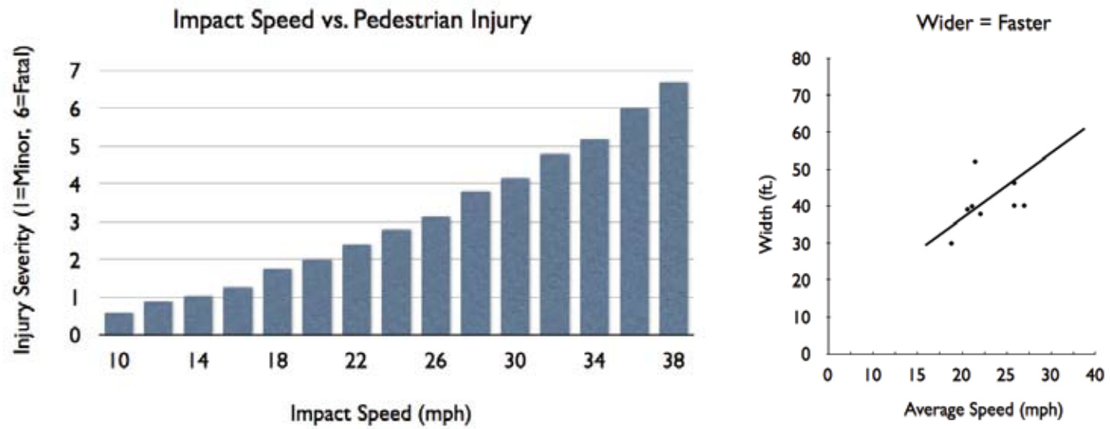
A related point steps beyond street width: the sense of spatial enclosure provided by structures lining traditional streets also influences traffic speeds. A national study, *Improving the Residential Street Environment* (Smith-Appleyard, for the Federal Highway Administration, 1981), found that while wider street widths are the primary cause for higher traffic speeds, wider building-to-building distances also increase speeds.

Reid Ewing, a research professor at the University of Maryland's Center for Smart Growth, Dr. Richard A. Schieber, of the National Center for Injury Prevention and Control, and Charles V. Zegeer, director of the Pedestrian and Bicycle Information Center at the University of North Carolina's Highway Safety Research Center, studied sprawl and collision fatality risk in 448 counties comprising the nation's 101 largest metropolitan areas. They developed a sprawl index identifying conventional development patterns and used regression analysis to correlate that index to all-mode traffic fatalities. Their results, published in the *American Journal of Public Health* (September 2003), found that:

- Urban sprawl is "directly related" to traffic and pedestrian fatalities; the more sprawl, the higher likelihood of traffic and pedestrian fatalities.
- "Sprawling areas tend to have wide, long streets that encourage excessive speed."
- "… developing land in a more compact manner may reduce pedestrian deaths, provided that the street network is designed for lower-speed travel."

These findings are confirmed by other work done by Swift, Noland, Dumbaugh and others. Burden summarized that their work shows that "better connected street systems and narrower streets and lanes (generally 26-28 foot wide local streets or 9-10 foot lanes [for avenues]) are the most safe." The Local Government Commission's publication, *Emergency Response, Traffic Calming and Traditional Neighborhood Streets* (Burden & Zykofsky, 2001), amplifies another key point that, "…to insure that emergency response times are given full consideration, fire department personnel – along with other key players – must be at the table."

"Urban sprawl is 'directly related' to traffic and pedestrian fatalities; the more sprawl, the higher likelihood of traffic and pedestrian fatalities."



The relationship between traffic speed and street width, right, and the speed vs. safety implications, left, are clear: The wider the street, the faster the traffic, which means a greater likelihood of severe or fatal pedestrian injuries from collisions. In other words, traditional streets calm traffic and reduce the severity of pedestrian injuries. (Charts courtesy of Peter Swift)

Traditional Streets are Safer for People and Traffic

Street Grid's Efficiency Helps Everyone

New urbanists like connected street networks because they handle large volumes of traffic at safer speeds in people-centered environments while offering multiple ways to get from A to B. At the same time, the importance of a 4- to 6-minute response time cannot be underestimated. Firefighters swear by it for three reasons:

•Someone who has collapsed and isn't breathing typically starts suffering brain damage within 4 to 6 minutes of oxygen deprivation; except for rare cases, brain death almost always occurs after 10 minutes.

•Fires can reach an uncontrollable condition called "flashover" within 3 to 8 minutes. Fire death is certain if someone is present at that moment.

•It mitigates unavoidable lag time as firefighters don't know about emergencies until notification. And once at the scene, they must evaluate and set up before attacking a blaze.

"Traditional, connected street networks, even when narrower than 20 feet, can reduce response times by offering multiple and shorter paths to a given location."

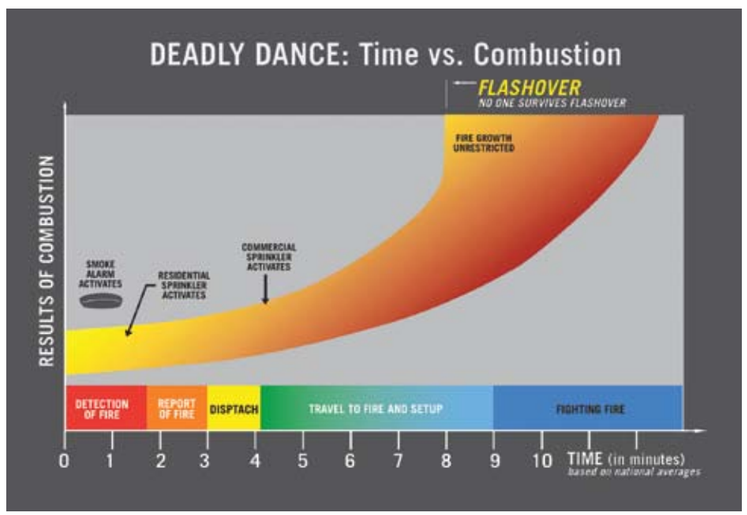
Traditional, connected street networks, even when narrower than 20 feet, can reduce response times by offering multiple and shorter paths to a given location.

In Charlotte, N.C., the city's Department of Transportation examined connectivity and response time in a 2008 study and found the citywide average response time rose from 4.5 minutes in the mid-1970s to 5.5 minutes in 2002. This increase corresponds with the prevalence of street design patterns in conventional subdivision development.

However, the study discovered that since October 2001, when the city's subdivision ordinance began requiring street connectivity, average response time has dropped 30 seconds, to 5 minutes. This is a dramatic drop given the lag time in transforming conventional subdivisions into connected spaces.

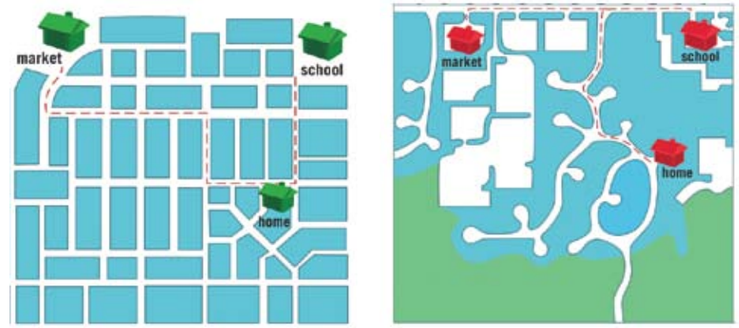
In addition, connected street networks can also improve fiscal efficiency when it comes to fire stations' fixed costs. Both Charlotte and Raleigh, N.C. studied the effects of connected versus disconnected street patterns on fire station coverage and cost efficiency. Each city concluded – in 2008 and 2000, respectively – that connected networks improve both factors.

Response Time: When a Short Wait Saves Lives



The 4- to 6-minute response time is critical for emergency responders, given the inevitable lag between a blaze starting, or someone falling unconscious, and the fire department being alerted. When present, sprinklers help control the fire early, lengthening the time before deadly, uncontrollable "flashover" occurs. That response window also gives emergency medical technicians the best chance to treat unconscious victims before brain damage or brain death occurs. (Courtesy of Austin, Texas, Fire Department, Northern Illinois Fire Sprinkler Advisory Board, Chicago Sprinkler Fitters Local 281, Orland Fire Protection District, Orland Professional Firefighters, Sprinklerfitters Local 669, and National Fallen Firefighters Foundation)

Grid vs. Sprawl: The Power of Connectivity

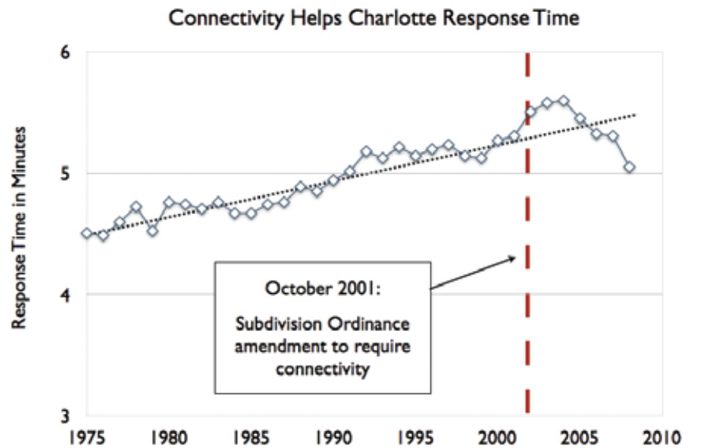


In traditional New Urbanist neighborhoods like the one at left, pedestrians, automobile drivers, and emergency responders can take myriad routes to any destination on streets designed to accommodate both vehicles and people. Suburban sprawl, center, excludes pedestrians in favor of cars, and funnels traffic onto a limited number of routes. Here, if this one route is blocked, emergency responders trying to reach the house must travel miles around to the subdivision's other access point.(Image by Paula Salhany, courtesy of Duany Plater-Zyberk & Co.)

"...since October 2001, when the city's subdivision ordinance began requiring street connectivity, average response time has dropped 30 seconds, to 5 minutes. This is a dramatic drop given the lag time in transforming conventional subdivisions into connected spaces"

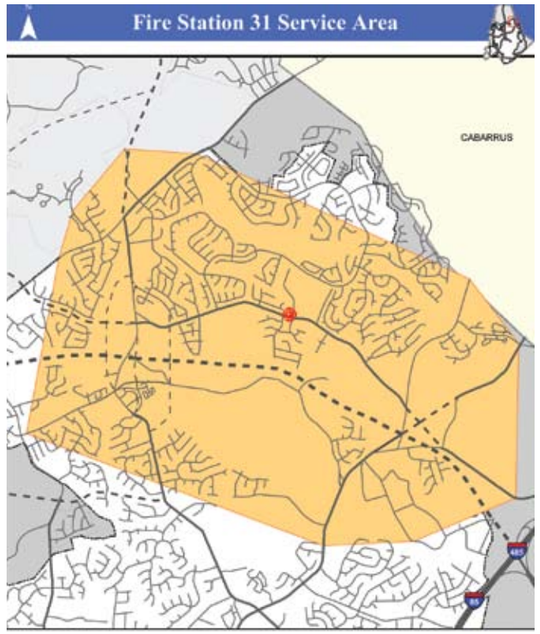
Charlotte compared eight fire stations from near downtown to a newer neighborhood at the city's periphery (See "Saving Lives and Money: A Charlotte Case Study", page 8).The study confirmed that higher street connectivity means that a single station can serve more households at a lower per capita cost. For example, Station 2 in Dilworth, a neighborhood begun in the 1890s as a streetcar suburb, scored best, serving 26,930 households in 14.1 square miles at an annualized per capita life cycle cost of $159. Station 31 near Highland Creek, which developed in the 1980s and 1990s, scored worst, serving just 5,779 households in 8 square miles at an annualized per capita life cycle cost of $740.

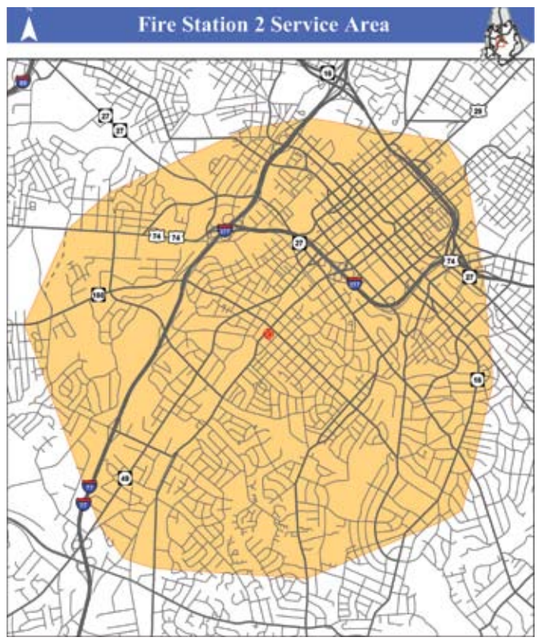
Raleigh's study, cited in *Planning for Street Connectivity: Getting from Here to There* (Handy, Paterson & Butler, 2003), looked at response area coverage within a 1.5-mile radius of fire stations. The authors concluded that older neighborhoods had greater service efficiencies due to their greater street connectivity – "...a fire station in the most interconnected neighborhood could provide service to more than three times as many commercial and residential units as the least connected neighborhood."



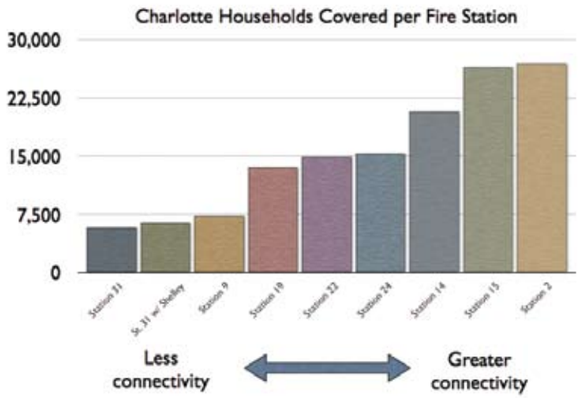
In a 2008 study, the city of Charlotte, NC, found that average response times decreased as street connectivity increased after a connectivity ordinance became law in October 2001. (Chart courtesy, City of Charlotte, NC)

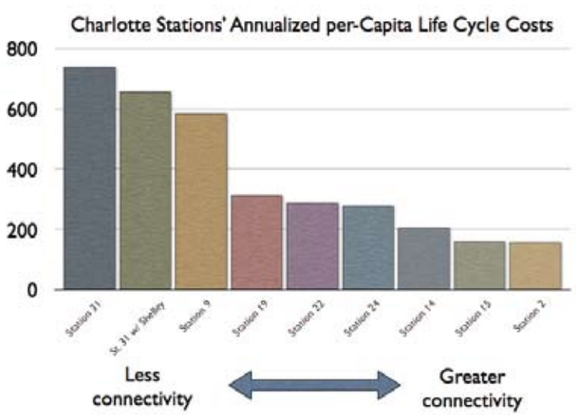
Saving Lives and Money: A Charlotte Case Study





The benefits of connectivity and traditional neighborhood development become clear in these maps showing the coverage areas of Charlotte Fire Stations 2, bottom left, and 31, top left: Station 2 covers 4.5 times more addresses in highly connected Dilworth than Station 31 does in sprawling Highland Creek, and at a much lower annualized per capita cost ($159 vs. $740).
Moreover, the charts, below, show how this pattern holds true with other fire stations, too. They also show that Station 31 and nearby subdivisions would benefit from a proposed, but not yet built 300-foot connection on Shelley Avenue that could shave a mile off the 1 1/2-mile route firefighters must currently drive.
Station 31 could then cover approximately 12.5 percent more households and 17 percent more area for a lower annualized per capita cost ($659), yet still vastly under-perform Station 2. (Charts, maps courtesy of City of Charlotte, NC)





States and Towns Embracing Reform

Connectivity, Choice are Key for New Approaches

Street width is mainly a matter of local and state jurisdiction. Most local ordinances discuss street width variances or focus on connectivity requirements.

Only Oregon and Washington allow local jurisdictions to override the 20-foot clear rule. Oregon gave local communities increased flexibility in a 1997 law developed with the state's fire service (Oregon Revised Statutes, 368.039). The statute empowers local governments to design their own street standards in consultation with the local fire department. Washington's updated code is very similar to Oregon's, with the local government allowed to adopt street standards that differ from the state uniform fire code (see Revised Code of Washington, 19.27.060 [5]).

The Commonwealth of Virginia is moving to reduce street width on a statewide basis. Virginia is a unique case because its Department of Transportation is responsible for local road maintenance. In 2008, they adopted new connectivity requirements based on the link-node ratio – the number of links (stretches of streets or alleys) divided by the number of nodes (intersections) in a given area; the higher the ratio, the more connected the street network (a perfect grid's ratio is 2.5). Starting this year, VDOT requires new developments to meet minimum ratios of 1:4 for suburban areas and 1:6 for urban, or compact areas.

Assistant Secretary of Transportation Nicholas Donohue said those ratios will be a vast improvement, as most developments in Virginia since the 1970s offer minimal connectivity. The new connectivity standards will allow the curb-to-curb width of future neighborhood through streets will be much less than the current 36 feet, Donohue added. The pending new standards are 29 feet with parking on both sides or 24 feet with parking on one side. "Increased connectivity allows reduced street widths because it provides firefighters with at least two paths to respond to any emergency", he said.

Fire departments welcome increased connectivity. Carl Wren, senior engineer of the Austin (Texas) Fire Department says the biggest concern with connectivity ordinances is the willingness of future county commissions, city councils or village boards to follow them in the face of developer and/or residents' resistance. The question becomes how communities ensure that connectivity goals are not short circuited while discrete projects are developed over the years by different people and in various neighborhoods. This is an especially important topic in an era where developers are designing the streets – not like in the past where the local governments had general street plans.

Most fire departments can identify long dead-end roads or road stub-outs in adjacent subdivisions resulting from abandoned plans for connectivity during phased construction of developments. Fire departments and street designers alike can cite examples of connectivity being defeated by the refusal of adjacent communities to cooperate on the alignment and connection of neighborhood streets.

A trio of North Carolina communities, Davidson, Cornelius and Huntersville have pioneered connectivity requirements. Davidson attempts to address neighborhood resistance to increased connectivity through signage. Its 2001 ordinance requires that signs be posted on cul-de-sacs and dead-end streets that "have the potential to connect" to adjacent properties where future development may go, declaring: "This cul-de-sac is temporary. The street will be extended when the adjacent property develops." Huntersville, recently mandated similar signs for dead-end streets that will one day be connected to the next subdivision. See *Planning for Street Connectivity: Getting from Here to There* for more information.

Potential emergency response problems from the failure, or inability to connect streets are clearly seen in this aerial photo of the Barton Hills neighborhood in Austin, Texas. While geography and the city's concerns about impervious cover helped prevent this connection in the red circle, residents' opposition influences decisions to stop other connections, even though neighborhood traffic flow and emergency response may be hampered. (Photo courtesy of Carl Wren)

Fire Officials, Transportation Engineers Want Connectivity

Examples Prove Cooperation Can, Does Work

Effective emergency response and traditional streets can coexist. In fact, they already do in every neighborhood predating World War II. Given existing codes, however, new developments often fail to achieve the connectivity necessary for fast response times or the human-scaled streets that lead to fewer traffic injuries and fatalities.

But this trend is starting to change—fire officials and transportation engineers are coming together to build safe places. Dan Burden, founder of Walkable Communities, a non-profit organization promoting pedestrian and bicycle-oriented development, reviewed this progress in *Emergency Response and Traditional Neighborhood Street Design*. This study presents the Waterfront District in Hercules, Calif., Harbor Town in Memphis, Tenn., and High Point in Seattle, Wash., as case studies of New Urbanist neighborhood designs successfully integrated with existing fire service.

Well-designed streets like those in Harbor Town, above, and Winter Park, Fla., below, work for pedestrians, neighborhoods, and emergency responders. Poor designs that create access problems sour emergency responders to future developments using traditional street design. (Top photo courtesy of Looney Ricks Kiss Architects and RTKL; bottom photo courtesy of Norman W. Garrick)

In Hercules, the developer and redevelopment agency collaborated on providing residential sprinklers for the 64 single family homes and the waterfront district was built using 26-foot-wide streets that offered 17 feet of clear space. The trade-off was agreeing with the fire marshal's insistence on removing parking from one side of the streets – an arrangement not typically favored by New Urbanists, but agreed to, Burden said, because it was better to design and build a good street at the time, and revisit the parking question at a later date.

Seattle's fire marshal approved the designs for the High Point neighborhood because its proposed street system was designed to fit in with the surrounding area's existing grid, even though more current codes called for wider streets. Burden said the fire marshal agreed to narrower streets in this case not only for that reason, but also because the innovative stormwater strategies called for narrower streets.

At the 2008 New Partners for Smart Growth conference, Antonio Bologna, architectural consultant and vice president of development for Harbor Town, spoke about the importance of flexibility and working early and often with a local fire department. Using this approach for Harbor Town meant problems involving intersection designs, primary access routes, and turning radii were cooperatively identified and solved – a strategy he said paid off when it came time for city council approval and the Memphis Fire Department indicated its enthusiastic support.

Dan Burden notes that for narrower, connected streets to work properly, they "must be part of a well-connected street system," and that "attention to design details is essential." Burden says developers and engineers must consider connectivity along with street width, turning radii, parking, and streetscape treatments. In *Healthy Neighborhoods and Healthy Streets* (2008), a guide written as part of this initiative, he calls for flexibility in designs based on performance instead of prescribed numbers; "Being too prescriptive creates problems for developers, designers and responders." Burden outlines the functions of traditional local, collector and arterial streets:
(1) assure large equipment access and movement,
(2) provide appropriate speed and volume,
(3) allow motorists to pull over to let responders by, and
(4) allow sufficient width for incident 'deployment' (generally 16-20 feet)

The August 2007 edition of *Urban Land* featured the work of Reid Ewing, Ted Stevens and Steven J. Brown tracking efforts in seven cities, plus the state of Oregon, to achieve streets with less than 20 feet clear. They found many examples of where streets with less than 20 foot clear were achieved and some cases much less. In Orlando, Fla., the Baldwin Park community was allowed a network of

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"Using this approach for Harbor Town meant problems involving intersection designs, primary access routes, and turning radii were cooperatively identified and solved – a strategy he said paid off when it came time for city council approval and the Memphis Fire Department indicated its enthusiastic support."

Sprinklers Help Street Design Discussions

Sprinklers are the key to greater flexibility from the fire service, says Capt. Frank Kinnier, an assistant fire marshal with Chesterfield County, Va., Fire & EMS"You don't have these massive fires when there are sprinklers," he says, "and you don't have the need for as much apparatus." Or for as much water.

For example, the International Fire Code requires ladder trucks for buildings over 62,000 square feet and more than 30 feet tall. The code also requires a 26-foot clear lane on two sides that must be placed at least 15 feet and no more than 30 feet from building facades to accommodate trucks' outriggers and hose placement. But if that 62,000-square-foot building has sprinklers, the code requires only one 26-foot clear lane and does not require ladder trucks until the building is over 124,000 square feet.

Sprinklers also reduce the amount of water required from hydrants, Kinnier says. For a typical one-story, 62,000-square-foot wood frame building, the required flow is 6,750 gallons per minute (gpm). If that building does not have a sprinkler system and catches fire in the middle of the night, firefighters learn of the blaze once it triggers alarms and blows out of the ceiling or windows. It's so big that once firefighters arrive, they'll flow water at the 6,750 gpm rate for about 30 minutes, for 202,500 gallons. However, if that building has sprinklers, the required flow is reduced by 75% to 1,687 gpm, will activate alarms, and will likely require significantly less water overall. "Water conservation," Kinnier says, "is even more powerful when you apply it to residential (buildings)."

Limited Options with Equipment Size, U.S. Fire Marshals Say

Former Milwaukee, Wis., Deputy Chief Neil Lipksi essentially created a specialized fire engine for Milwaukee by threatening to take the city's business elsewhere if the manufacturer wouldn't build a truck scaled to the city's existing fire stations and street grid. While he was able to be more adamant with fire equipment manufacturers about their city's particular needs, his experience is an exception to the general rule: fire engines, ladder trucks, and ambulances in the United States are not getting smaller.

Most residential structures in the U.S. are built of wood and so their inherent fire loads (available fuel for a fire) are much heavier than those in Europe or Japan. This leads to the need for first responding units to carry more equipment and water than the typical smaller fire engine can handle. Second, most, if not all, fire departments have limited capital budgets and prioritize the purchase of engines and ladder trucks capable of handling almost any emergency from medical to hazmat or roaring fires while being mindful of the number of firefighters required to adequately operate the vehicle. Moreover, fire code officials enforce road design limitations based on the emergency vehicles already in service in their jurisdictions and generally do not have a voice in the emergency vehicle purchasing process.

(Photo courtesy of Combined Media, via Flickr under a Creative Commons license)

CNU Charter, Canons, and Streets

The Congress for the New Urbanism's interest in better street design dates from its founding in 1993. Members subscribe to the Charter for the New Urbanism, a list of principles for building better communities at all scales, from the region down to the street. Signed in 1996 at CNU IV, in Charleston, S.C., the Charter devotes a section to "The block, the street, and the building" that states:

•A primary task of all urban architecture and landscape design is the physical definition of streets and public spaces as places of shared use.

•The revitalization of urban places depends on safety and security. The design of streets and buildings should reinforce safe environments, but not at the expense of accessibility and openness.

•Streets and squares should be safe, comfortable, and interesting to the pedestrian. Properly configured, they encourage walking and enable neighbors to know each other and protect their communities.

In addition to the Charter, many CNU members also subscribe to a new document, the Canons of Sustainable Architecture and Urbanism. Introduced in 2008 at CNU XVI in Austin, Texas, the Canons expand upon the Charter's inherent emphasis on sustainable development, and provide operating principles for those attempting to implement the Charter.

Of streets, blocks, and networks, the Canons say:

•The design of streets and the entire right-of-way shall be directed at the positive shaping of the public realm in order to encourage shared pedestrian, bicycle and vehicle use.

•The pattern of blocks and streets shall be compact and designed in a well-connected network for easy, safe, and secure walkability. This will reduce overall vehicular usage by decreasing travel time and trip length. Design shall strive to minimize material and utility infrastructure.

For more information about the Charter of the New Urbanism, please visit www.cnu.org/charter.

For more information about the Canons of Sustainable Architecture and Urbanism, please visit www.cnu.org/canons.

BUILDING continued

and poses barriers to creating compact, pedestrian-scaled neighborhoods.

The Initiative Begins

In 2007, the U.S. EPA's Smart Growth program awarded CNU a grant to study this problem and find solutions. An inaugural workshop held in Austin, Texas, united two dozen engineers, planners, and fire marshals to discuss street design, safety, and emergency vehicle operations. The diverse participants absorbed presentations from fire marshals, transportation engineers and urban planners and designers.

Participants discovered more common ground than was originally assumed – for example, a shared interest in improving public safety and promoting connected street grids – and developed a list of shared values that provided a solid foundation for moving forward. The findings of the inaugural workshop can be found at cnu.org/emergencyresponse.

Neil Lipski, a former deputy fire chief from Milwaukee, Wis., and Peter Swift, principal of Swift & Associates, immediately set to work updating the emergency vehicle response section for *Context Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities* – the CNU/Institute of Transportation Engineers proposed recommended practice. This manual advances street designs that create walkable environments and the inclusion of the emergency response section advances this initiative among a broad section of transportation engineers across the country. Their work is being incorporated into the next edition, scheduled for release in 2009.

The project team then determined that the best way to affect practice across the country is by amending national fire codes in ways that empower local fire officials to approve streets with less than 20 feet clear in specific circumstances. They identified specific code language within the International Fire Code as the biggest stumbling block because this is the most prevalent code adopted at the State and local levels. The team committed to submitting code proposals to the International Code Council (ICC) within its 2009-2012 code amendment cycle.

A dozen team members continued to strategize on how best to write alternative code language. They chose a two-prong approach -- language creating an exception to the current code and an additional appendix explaining the circumstances in which the exception would be acceptable. The group began drafting new code and appendix language in the fall and plans to submit them to the ICC in June 2009.

CONNECTIVITY continued

neighborhood streets with curb-to-curb widths between 20 feet and 22 feet, which naturally slows traffic. The community also built a street grid that includes alleys, ensuring that emergency responders have myriad paths to an emergency, and required sprinklers in all buildings.

Atlanta fire and public works officials compromised on street widths in the Glenwood Park neighborhood following a fire engine ride-along demonstration of narrow street maneuverability that included Charles Brewer, CEO of Green Street Properties, and then-Mayor Shirley Franklin. The developer was subsequently able to build street widths of 20 feet without parking, 27 feet with parking on one side, and 23 feet with parking on both sides. The developer expanded turning radii at corners from 15 feet to 20 feet and placed tree islands in parking lanes to help visually narrow street vistas.

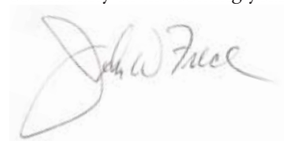
Healthy Collaboration Leads to Healthier Environments

EPA's goal is to protect human health and the environment. Where and how communities grow can dramatically impact our nation's land, air, and water resources. Communities are looking for development approaches that will help them achieve benefits for their economies, environments, and quality of life.

Walkable, compact communities built in areas already served by existing infrastructure not only reap better environmental outcomes in the form of less stormwater runoff, reduced per capita emissions, and better preserved natural and open spaces. Smart growth development also leads to better community outcomes, such as expanded choice in housing and transportation, and improved health.

EPA is proud of our collaboration with the Congress for New Urbanism and our partners in the emergency response community to identify and remove barriers to achieving smart growth. In our first year of work together, we have made great strides in identifying areas of common interest, such as improved connectivity that provides redundancy in emergency access routes as well as better mobility for community members. In addition, narrower streets reduce runoff, as well as slow traffic to reduce fatalities and improve community health and safety. Compact development can make the delivery of emergency response services more cost-efficient, and reduce the rate of land consumption required for new growth at the same time.

The first year has been a productive one, and we look forward to the fruits of our ongoing partnership between smart growth proponents, new urbanists, and our partners in the emergency response community in the coming years.



John Freece, Director, U.S. EPA Smart Growth Office

Get Involved

The ultimate goal of the Emergency Response & Street Design Initiative is to see traditional streets in connected networks acceptable by right – easy for new urbanists to get approved and easy for fire marshals to approve them. As an individual involved and concerned about emergency response and street design, we welcome your ideas and experience on this matter. The initiative team is submitting to the International Code Council in 2009 the following three items:

Code Reform

The initiative team is submitting to the International Code Council by June 1, 2009, the following three items:

1) Proposed new language for the International Fire Code, empowering local fire officials to approve streets with less than 20 feet of clear space under specific circumstances;

2) Proposed new language describing the specific circumstances for Appendix D of the Fire Code, to be available for local jurisdictions to adopt as they see fit; and

3) Commentary to support the proposed new changes.

We welcome your input and support and ask you to submit comments to the ICC during the window for public input, which opens after June 1 and runs through Feb. 12, 2010. While hoping these changes will be accepted during this code amendment cycle, we realize this process can take multiple cycles over several years.

Case Studies and Examples

We're especially looking for examples of successful municipal codes or ordinances allowing narrower streets with the fire department's support. Examples of successful municipal codes or ordinances allowing narrower streets and has the fire department's support are also very helpful.

Got other ideas? Please send us an e-mail and check the Emergency Response & Street Design Initiative website for updates and information: cnu.org/emergencyresponse

Heather Smith, Planning Director,
hsmith@cnu.org

Additional Resources

CNU Emergency Response & Street Design Initiative website: Includes the latest updates on the initiative, summaries of workshops, downloadable presentations, an annotated bibliography, and information on many of the studies mentioned in this report: www.cnu.org/emergencyresponse

International Code Council's Code Development website: Includes information about the code development process and links to the public comment form (comments are due by Feb. 12, 2010): www.iccsafe.org/cs/codes

Local Government Commission Street Design website: Includes an overview of the LGC's work on street design, information on the 2008 New Partners for Smart Growth conference, and links to publications, including Emergency Response and Traditional Neighborhood Street Design (Burden & Zykofsky, 2000-01): www.lgc.org/transportation/street.html

U.S. EPA's Smart Growth Office
www.epa.gov/smartgrowth

Virginia's new connectivity rules
www.vdot.virginia.gov/projects/ssar/

ROLL UP YOUR SLEEVES

Like what you've seen? Help build a better future at these CNU events.

Whether it's beginning new initiatives or advancing existing ones, many of the most compelling ideas in New Urbanism result from CNU's gatherings. Join us at future events as we work toward creating new standards for streets that support New Urbanist and Emergency Response goals. CNU's annual Congress and Transportation Summit feature panel discussions and work sessions with leading practitioners. Events are open to all; more information can be found at www.cnu.org.

The annual Congress is the leading venue for new urbanist networking, collaboration, and education, drawing over 1,500 innovators from far and wide to discuss development practices and public policies, learn new research, and advance new ideas to transform our communities. Don't miss these opportunities to share your experiences, discover new tools, and learn how you can create better streets and connected neighborhoods. Upcoming events will have a special focus on street design and public health to create safer urban environments.

Future Congresses

CNU 17: Denver, Colorado, June 10-14, 2009
CNU 18: Atlanta, Georgia, May 19-22, 2010
CNU 19: Madison, Wisconsin, June 1-4, 2011
Visit www.cnu.org/congresses for more information.

CNU Transportation Summits are innovative New Urbanist gatherings of 150 people where experts gather to present ideas and work towards reforming transportation standards that prevent high quality urbanism. This year, we will explore how Oregon's state laws impact local community street designs and emergency response times.

Future Transportation Summits

2009: Portland, Oregon, November 4-6, 2009
2010: Indianapolis, Indiana, Dates TBD
2011: Burlington, Vermont, Dates TBD
Visit www.cnu.org/transportationsummits for more information.

These are your opportunities to learn the latest solutions, whether it is reframing street design into a public health issue or forging new standards in community codes. Turn obstacles into opportunities: Join new urbanists and emergency responders, transit planners and elected officials as we work to reduce response times, improve safety and create great urban environments. These events are open to all.

For more information on the Emergency Response & Street Design Initiative, or to get on the e-mail list for reminders about these events, contact Heather Smith at hsmith@cnu.org.

CONGRESS FOR THE NEW URBANISM

CNU

The Congress for the New Urbanism

The Marquette Building
140 S. Dearborn St., Suite 404
Chicago, IL 60603

(312) 551-7300
www.cnu.org

Emergency Response

Traffic Calming and Traditional Neighborhood Streets

Dan Burden
Walkable Communities

with **Paul Zykofsky**
Local Government Commission
Center for Livable Communities

Origins and Purpose of this Manual

This manual was conceived and written following visits by the author, Dan Burden, to over 800 towns and cities across the nation dealing with speeding, congestion, noise and other problems on their streets. Many of these communities are struggling to make their streets more livable by reducing cut-through traffic and slowing down cars. Unfortunately, fire department personnel — the heroes in many of our towns and cities — often tend to come across as the villains when they oppose these changes. My experience is that fire department personnel are often blindsided by these changes and as a result they respond in a reactive way. When fire department personnel are part of the team that is trying to solve the problems, the results are often very different.

These issues are of special concern to me because I grew up in a family of firemen. My father was a fire chief in Columbus, then at Port Columbus Airport and later in Westerville, Ohio, and my brother recently retired as a lieutenant in Westerville. During the 1950s and 1960s, like many of my contemporaries, I walked and bicycled everywhere. I later spent more than thirty years learning the issues and then working with local governments in the state of Florida to design safe, livable and efficient streets. I believe that specialization and the failure of many professions to learn the broader issues of neighborhood and community design and safety have led to shortsighted approaches. Common sense is lacking in most local neighborhood and town development practices. I now travel to nearly 200 communities each year attempting to bring balance and a holistic approach to these issues, while identifying and resolving conflict between groups of specialists and local residents to promote a workable vision.

This guide, and the videotape that accompanies it, was developed to address some of these concerns and is part of an effort launched by the California-based Local Government Commission (LGC) to develop some tools that are useful to all parties concerned with these efforts. In the fall of 1999 the LGC arranged for me to visit with fire department personnel in Chico and Mountain View, California and Portland, Oregon. During those visits I had the chance to discuss some of the difficulties and challenges traffic calming and narrow streets pose to fire department personnel. I also learned the importance of working with your fire department from the outset.

In too many cases key professionals are left out of the communications loop, and are forced to make decisions in isolation and in defense of their specialization. Traffic engineers, planners, fire administrators, police, architects, developers and neighborhood residents all have something to offer and need to be part of the design team to create better streets and neighborhoods. I hope that this document will contribute to that effort.

Dan Burden

For additional information on the issues discussed in this manual, I refer the reader to ***Street Design Guidelines for Healthy Neighborhoods*** and ***Streets and Sidewalks, People and Cars: The Citizens' Guide to Traffic Calming*** available from the Local Government Commission at www.lgc.org. If you have additional questions or comments check the Walkable Communities web page at www.walkable.org.

EMERGENCY RESPONSE
TRAFFIC CALMING AND TRADITIONAL NEIGHBORHOOD STREETS

December 2000

Written by:
Dan Burden, Walkable Communities, Inc.
with Paul Zykofsky, AICP, Local Government Commission

Photography by:
Dan Burden, Walkable Communities, Inc.

Edited by:
Lys Burden, Walkable Communities, Inc.
Paul Zykofsky, AICP, Local Government Commission

Reviewed by:
Michael Wallwork, P.E. and Sue Newberry

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1414 K Street, Suite 600, Sacramento, CA 95814-3966

(916) 448-1198 fax (916) 448-8246 www.lgc.org

The Center for Livable Communities is a national initiative of the Local Government Commission, a non-profit, nonpartisan, membership organization of elected officials, city and county staff, and other interested individuals throughout California and other states.

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INTRODUCTION

During the past decade, residents in communities across the nation have been demanding that cities take action to slow traffic on their streets. The result has been adoption of a wide range of "traffic calming" measures. At the same time, a national movement has emerged that espouses "smart growth" and advocates creation of neo-traditional, "new urbanist," livable communities with narrow streets, lanes and alleys balancing the needs of motor vehicles with walking and bicycling.

While these changes have raised the concern of fire departments and other emergency responders, there is no reason for alarm. Well-conceived traffic calming techniques and traditional neighborhood street design can accomodate the needs of emergency responders while creating safe and livable neighborhoods. However, to insure that emergency response times are given full consideration, fire department personnel — along with other key players — must be at the table.

This manual is designed to provide fire department and other emergency response personnel with a working knowledge of traffic calming and traditional neighborhood street design so that they can play a partnership role in discussion and implementation of these measures. It is also designed to give elected officials, city managers, planners, traffic engineers and residents greater understanding of some of the challenges that emergency responders face.

The problem often starts when we think of streets as places designed only for cars and trucks. This view has become dominant throughout the U.S. in the past 50 years. But streets, especially local residential streets, have many roles to play. They are the "outdoor living room" where neighbors meet, kids play and we develop a sense of community. They are the place where our kids walk to school, learn to ride a bike and begin to develop the skills for coping with the larger world. They are also the place where our parents and grandparents remain connected and vital. As we build new communities and revitalize existing ones, we need to recognize that local streets have many roles to play and the movement of cars and trucks is only one of them.

Unfortunately, our task has been made more difficult by traffic management and traffic calming programs in many communities that have not been very well thought out.

For example, the proliferation of unwarranted stop signs, street closures and speed humps that result in significant increases in emergency response times is cause for concern.

However, this writer has found that cities with the most effective traffic calming and traditional neighborhood street programs rely on highly interactive partnerships between residents, engineers, policymakers and emergency response personnel. Leaving any stakeholder out of the process leads to problems; the needs of each group must be analyzed and evaluated. For example, Portland, Oregon fire administrators were left out of early traffic calming plans. This resulted in installation of speed humps and other measures on emergency response routes which caused delays of several minutes to some calls and eventually forced the department to abandon these important routes.

Emergency responders try to stay under a 4-minute response window to reach non-breathing patients in time. This response time also reduces the danger of fire, which doubles in intensity every minute.

Today, the planning and public works departments work with the fire department and other city agencies and residents to make sure traffic calming treatments meet their needs.

One thing that is certain: America has evolved a high degree of specialization in town and city development and management. This specialization, combined with poor communication, leads to planners, politicians, traffic engineers, police and fire administrators working independently and often at odds with one another. In addition, more and more citizens are feeling out of touch with their government. Given this atmosphere of poor communication, all sides tend to overreact.

Towns and cities implementing traffic calming programs report some bizarre behavior. A citizen in one California town carried his dead cat into City Hall, interrupted council members, and said *"There...the blood of my cat is on your shoulders....I hope you are happy!*" He got the City Council to install a dozen speed humps — against the advice of consultants urging the Council to wait for a month until a formal plan to install more sensitive and appropriate treatments could be worked out.

Recently, in one Idaho city the mayor ordered the fire chief to drive his truck into a roundabout while TV crews were filming. The reason? He wanted to prove that a roundabout would not work in his city. The press and public found this behavior childish and scary.

In this manual we describe a new language, vocabulary, art and science of neighborhood planning and traffic management for fire administrators. It is important for administrators of fire departments and fire marshalls to know why tighter corner radii are effective measures and may not slow response times. It is just as essential for traffic engineers or citizens to know why speed humps are not recommended on most emergency response routes.

It is also important to understand that traffic calming is still a "work-in-progress." While many of these issues are fairly common in parts of Europe, Australia, Japan and Canada, in the U.S. we still need more years to develop and test long term solutions. There is no national standard or "best practice" to follow. However, there is a lot that we do know, and it would be a serious mistake to dimiss traffic calming and traditional neighborhood street design as a fad.

Part One of this document covers some of the common myths about traffic calming. Part Two covers the tools of traffic calming. Part Three addresses new street-making skills, lists the important role of good land use planning, and discusses the design of streets of the future.

New cars on old streets. *America's oldest city, St. Augustine, Florida has some extremely narrow streets. With slight adaptation, conventional equipment is used throughout this historic district. Fire administrators have learned to use special equipment and approaches to protect some of the nation's oldest and best streets. Future streets are not likely to be this narrow, but to reach agreement on community-sensitive design will require greater flexibility.*

PART ONE: FACTS AND MYTHS

In an atmosphere in which emergency response personnel are sometimes left out of the fast changing community development and traffic engineering loop, it is sometimes hard to separate fact from fiction. This portion of the guide addresses common myths about driver behavior and traffic calming.

Fact or Myth #1

Faced with traffic calming measures, motorists will become more aggressive.

This statement is false. Most motorists behave aggressively on primary streets and highways where they are stuck in traffic or delayed for many minutes at busy intersections. Traditional and traffic calmed streets are designed to allow for a steady — albeit slower — flow of traffic. As a result, stress can be reduced in these tamer environments. Aggression does tend to escalate on higher speed suburban streets. These problems will continue. The same machines that give us freedom, access and mobility, making suburbs possible, getting us where we want to go "right now!" have also become dead ends for many. People report that they spend far too much time in their cars. This leads to aggression, frustration and many hours a week of personal lost time. Parking spaces are hard to find in many areas, intersections are jammed, and children have greatly reduced freedom to go places and do things on their own. New designs of neighborhood streets with traffic calming can help heal and repair many, but not all, of these problems caused by our over-dependence on motor vehicles.

Macho Man auto driver. *Furious tempers arise from being stuck in traffic. Tempers rise fastest on congested highways and arterial streets. Some drivers take to local streets just to stay in motion. Neighbors want to stop this unwarranted traffic. The appropriate response of a city is to fix the primary streets and intersections. Once traffic increases on local streets, traffic calming becomes a community priority. Faced with increasing traffic (averaging 2-5% growth per year) the desire for traffic calming will grow dramatically in the next decade.*

Fact or Myth #2

Traffic calming reduces response time.

Half-true. Poorly plannned traffic calming can impact response times. Well planned traffic calming programs should not. On some routes, traffic calming improves response times. Proper use of traffic calming on Balliol Street in Toronto, Ontario, where stop signs were removed, improved response times by 33%. Use of the right tools and attention to proper locations makes traffic calming a healthy partner to the safety mission of a town, reducing overall neighborhood crashes by 50-90%.

Some tools improve access. *Well selected and well placed traffic calming features do not slow responders, and may help insure access. In this test in Chico, California the entry curb extension (neckdown) prevented motorists from parking near the intersection. When cars were parked near the intersection the maneuver took 90 seconds. With the neckdown, the maneuver was back to the normal 6 seconds.*

Fact or Myth #3

Traffic calming devices damage fire equipment.

This statement may be true. Case studies in Portland and other cities suggest repeated exposure to vertical traffic calming tools such as speed humps and speed tables may accelerate stress fractures of ladders, cabinets and other equipment and accessories. It is best to insist that such tools as humps not be placed on primary emergency response routes. Dips and potholes have similar effects.

Select the right tools. *A series of speed humps on primary emergency response routes not only slows response, but may cause increased equipment fatigue. In most cases it is best to find alternatives to humps. In Everett, Washington an alternative treatment has similar speed reduction effects (bottom photo). The street is visually narrowed by striping to one ten foot lane. The narrower lane slows traffic but does not impede emergency response vehicles. This can be done at a lower price and provides a better alternative for everyone.*

Fact or Myth #4

Roundabouts and circles can delay emergency response times by up to 30 seconds.

This is largely untrue. Traffic circles are very large and can cause delays. However, large circles are not considered to be traffic calming devices. Most roundabouts, which are much smaller than circles, tend to speed up rather than delay emergency responders. Compared with four-way stop controls and many signalized intersections, which bring responders to a dead stop and can result in long queues, a roundabout keeps traffic moving. Typically, roundabouts slow most emergency equipment to 10-11 mph. But, by having empty intersection queues, response times may be improved by as much as 30 seconds, and even more in peak traffic times.

Roundabouts reduce intersection queues. *This Port Orchard roundabout is slightly larger than the previous intersection it replaced. Response times are kept in balance. Although it takes another 3-6 seconds to go around the new intersection, the queue of cars that slowed responders many hours of the day is gone. The added efficiency of roundabouts eliminates many delays caused by stacked traffic. The impact of roundabouts must be weighed against typical stacking at signalized intersections, traffic that usually must be bypassed.*

Fact or Myth #5

Traffic calming and narrow streets hinder site operations.

Largely untrue. Properly designed streets in new traditional developments include curb extensions at, or near, hydrant locations, thus prohibiting parking and assuring a full 20 foot space for operations. Close coordination with developers and planners assures high quality access and space for operations.

Fact or Myth #6

Traffic calming restricts access to streets.

False. Properly designed traffic calming measures include curb extensions, mountable medians and neckdowns designed with turning radii that allow adequate access to streets. For example, curb extensions physically prohibit motorists from parking near intersections where they might block access. Entry times into streets remain unchanged. In the most progressive traffic calming projects, new points of emergency access are provided to the neighborhood, enhancing walking and bicycling, as well.

Neckdowns improve access. *This neckdown in Boulder, Colorado not only reduces the entry speed of motorists, it insures that no one will park at the "throat," thus allowing access to the street.*

Fact or Myth #7

Traffic calming should not be used on emergency response routes, collector roads or arterials.

Partly true. Most traffic calming tools, such as chicanes, diverters, humps and tables should not be placed on major routes. However, all visual tools which help slow speeders, such as gateways, medians, landscaping, pigmented bike lanes and similar devices have no negative effect on emergency response. Meanwhile, properly designed lane width reductions, lane reductions, roundabouts and mini-roundabouts, which help improve the flow of traffic, are appropriate for many of these locations.

Fact or Myth #8

Traffic calming has no net safety benefit.

Not true. With good community and traffic calming planning, delays to households can be minimized. Good planning and placement of response equipment, selective use of first response equipment, efficient intersections, and improved access to neighborhoods have positive effects. Meanwhile, risk to residents from traffic in neighborhoods is real. Many Seattle neighborhoods, where traffic calming has been used for over 20 years, have seen a 93% reduction in crashes. Other neighborhoods report a 25-80% reduction in crashes.

Fact or Myth #9

Street closures greatly impact emergency access and response time.

True. Traffic calming practicioners are cautioned to stay away from street closures and other measures that reduce access. Recent experiments with street closures in such cities as Coral Gables, Florida, and Dayton, Ohio have been regressive. They often simply move traffic to another street and create new problems there. Only in rare cases are street closures warranted and helpful to a neighborhood. If such closures are warranted, pedestrian, bicycle and fire access must be retained.

Bike lanes help emergency responders. *This major collector in Chico, California is well designed to calm traffic without vertical or even horizontal deflection tools such as humps and chicanes. The collector is calmed by restricting the street to two lanes and adding a median. Motorists pull into the bike lane to let responders pass. The bike lanes also allow wider turning radii at corners. Meanwhile, on a local street network, short medians and restrictive entries (below), allow easy access and movement. The visual effects combined with the horizontal deflection slow traffic to acceptable levels.*

Fact or Myth #10

Fire fighters have been injured or killed when hitting traffic calming measures.
Sadly true. Speed humps hit by a fire truck at high speed can cause personal injuries, and a standing or unbelted firefighter can be tossed from a vehicle. Clear safety rules on response procedures and practices, adequate protective gear, safe driving, training and supervision can eliminate these preventable risks.

Speed humps and tables can be hazardous. *If hit at a high speed, this speed table could injure a fire fighter. Drivers and other responders adhering to proper training, national response guidelines, use of equipment and other safety precautions should not be affected by properly designed and marked traffic calming features.*

Fact or Myth #11

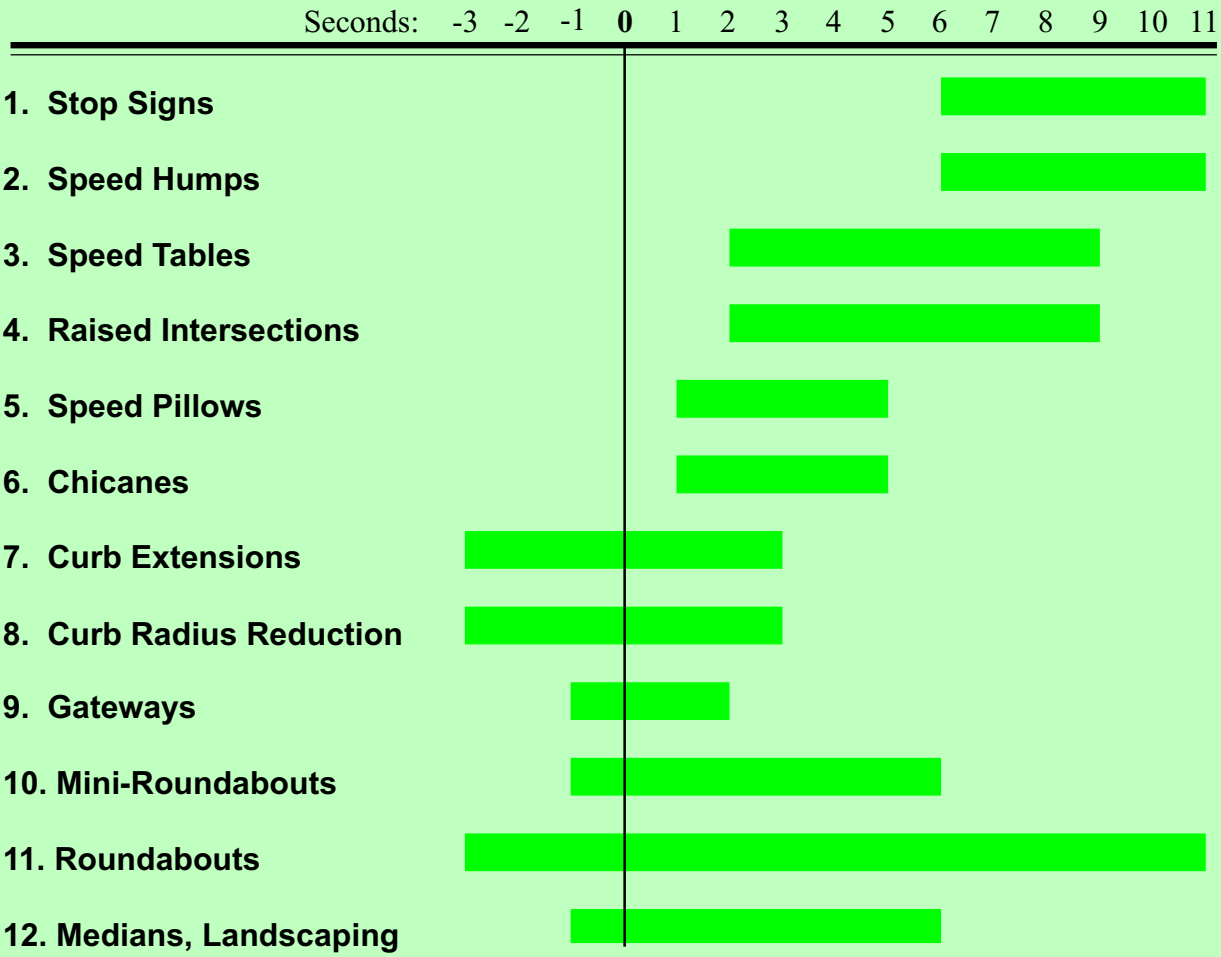
Traffic calming tools create added pollution, noise and risk.
Properly planned and placed traffic calming features have no negative effect on the environment. Most studies show that appropriate traffic calming tools produce steady, proper travel speeds through neighborhoods. This results in less noise, pollution and other negative effects. However, improperly placed humps and stop signs can have negative effects, including speed spiking, noise and traffic diversion to other streets. This can then result in the proliferation of poorly designed treatments.

Traffic calming has multiple benefits. *Traffic calmed streets reduce pollution, noise, risky behavior and inappropriate activities. This turn in Brea, California is properly designed for the typical elbow of a suburban street. Motorists exceeding 12-15 mph here would be uncomfortable. There is more than ample turning radius for the largest vehicles, including moving trucks.*

Speed humps can cause problems. *Inappropriate placement of traffic calming tools, such as speed humps, not only creates speed spiking, noise and delay, it also tends to transfer the problem to a nearby street, where concerns lead to installation of more inappropriate measures. Appropriate traffic calming tools must be placed using a systems-wide approach, treating an entire neighborhood, and not just the most pronounced problem site.*

PART TWO: TRAFFIC CALMING

Approximate Delay Caused by Different Treatments



Introduction to Traffic Calming

Americans have been concerned with the impact of cars on neighborhoods since the first autos came on the scene. For example, the Anti-Automobile Society, formed in Pennsylvania when the impact of autos was first being felt made this harsh pronouncement:

> *"Anyone driving a horseless carriage at night should come to a stop every mile and send up a signal rocket, then wait 10 minutes for the road to clear. If a team of horses should approach along the road, the motorist was obliged to pull off the road and cover his vehicle with a large canvas or painted cloth that would blend with the surrounding landscape. If the horses refused to pass even then, the motorist had to take his vehicle apart piece by piece and hide the pieces under the nearest bush."*

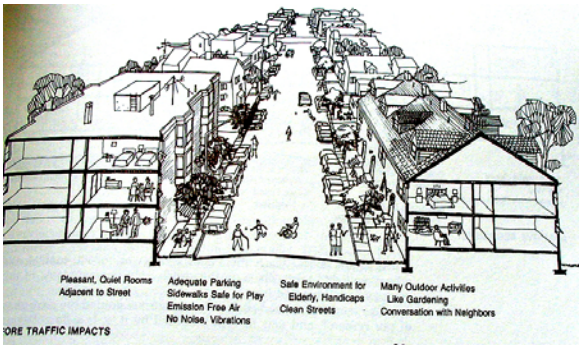
Imagine delays for emergency responders if such rules had ever been enforced! Fortunately, actions to tame the auto have taken a milder tone.

But while measures to civilize the car are more moderate today, traffic concerns are increasing as our towns and cities continue to grow, and as we've spread out more in a low density sprawl pattern of development to escape "overcrowded," "congested," "noisy" cities. The irony is that vehicular congestion hasn't gone away; instead it's gotten worse because in many of the suburban communities built since the 1950s we separated uses to such an extent that we made it impossible to run simple errands without jumping in the car. By now, more and more people recognize that there is no place to flee, and that we need to take steps to deal with the car and mitigate its negative impacts in the neighborhoods and streets where we live. Traffic calming has emerged as a reasonable way to do that.

So what is traffic calming, and how extensive are the treatments?

Traffic calming consists of a set of mostly physical treatments, or changes to roadways, that help manage the flow of traffic while requiring motorists to behave in a civil manner around shopping districts, schools and neighborhoods. Traffic speed, noise and volume are often reduced and a more even distribution of traffic often results from these efforts. Impacts range from moderate speed reductions (31 mph to 25 mph is common) on local streets, to reduced turning speeds on corners, improved pedestrian access across streets, and some arterial road adaptations (4 lanes may be reduced to 3 lanes).

Orlando, Florida is reconditioning many brick streets. Westmoreland Drive was traffic calmed by stripping off asphalt and reclaiming the former brick street and adding two roundabouts. Speeding was greatly reduced. Property sales and values climbed measurably following the changes. In retrospect, paving over brick did not save on maintenance costs, and by making higher speeds possible, these actions depressed residential home values. Measures such as brick streets have limited impact on response times.



Donald Appleyard's late 1970's work "Livable Streets" helped establish the harmful effects of traffic noise, volumes and speeds on neighborhood quality of life. When traffic volumes are low, as shown above, people play and associate with others and use the front portions of their homes. When traffic volumes, noise and speed are high, people abandon the front of their homes and interaction with neighbors is reduced.

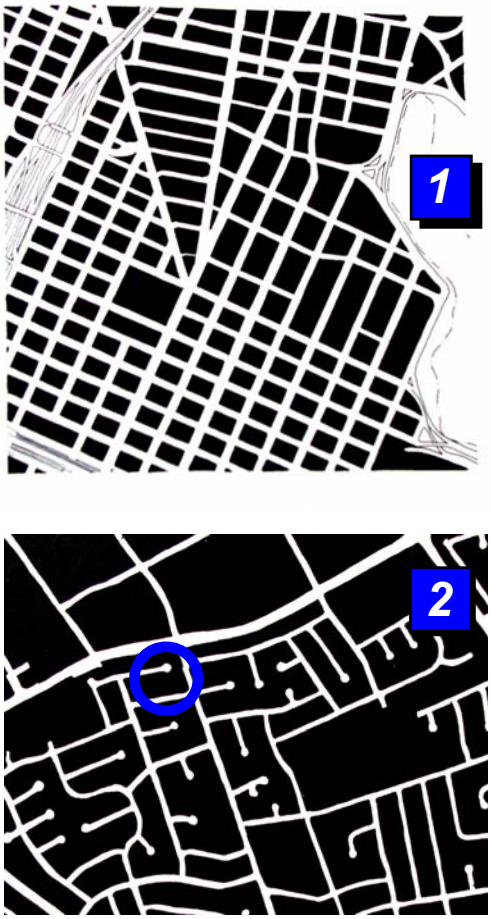
Measure of success. The measure of success of a traffic calmed street is not only seen in lower crash rates, speeds or volumes but in the number of people, and especially children, seniors and gardeners out in the street walking, playing and greeting their neighbors.

Long term changes to traffic calming should produce a rise in home owners versus renters,

and a general increase in property values. Some traffic calming measures are immediate, as was seen on Westmoreland Drive in Orlando, Florida. Rebricking the streets there and adding two roundabouts at either end, led to a general rise in property values and allowed people to sell their homes for the first time in recent years. In most cases, however, property values will only rise after longer term changes to improve the attractiveness and character of the neighborhood are implemented.

Origins. Traffic calming, like road rage, is a reaction to the dominance of the car or to design that has focused entirely on automobiles. People inside cars are getting more and more upset. People outside of cars are also unhappy. These emotions are likely to become more common among a larger portion of the population as driving demands increase. At the same time, towns and cities of every size and in every region are running out of simple, affordable or even feasible solutions for moving and storing cars. And moving to the suburbs is no longer viewed as the solution.

How did we get this way? Land development patterns launched in the forties and fifties with the birth of suburbia now account for 80% of the built neighborhood form. These new patterns not only included wide, often treeless streets and dead end cul-de-sacs, but more significantly they tended to isolate us from other people and from many of our basic daily needs. Separation of homes from stores, offices and even parks and schools, has resulted in most families making an average of 10 auto trips each day. Families that used to manage with one car now have two and sometimes three to four cars, which has compounded the problem. The former classic development pattern with a grid of streets that connect to nearby shopping, churches and parks (top illustration) was replaced by the isolation of cul-de-sac suburban patterns (bottom illustration).



Emergency responders in historic Oakland, CA (1) above, have dozens of access routes. In Walnut Creek, CA (2) access to the circled cul-de-sac has only one point of access and is difficult to reach. Meanwhile, Radburn, NJ (3, next page), a neighborhood built in the 1920s, that preceded the modern day suburb, provides good access. Green space and low speed streets are maximized. The 1928 Radburn low-speed traffic model is linked to the birth of modern day traffic calming. (Credit, 1-2, Allan Jacobs "Great Streets" and 3, Randall Arendt, "Rural by Design.")

Cul-de-sac development patterns made it harder to get emergency equipment to more distant, landlocked and isolated homes, thus leading to insistence on wider streets, removal of on-street parking and wide turning radii. Nonetheless, the result is that the emergency responder often has greater distances to travel to small residential pockets on streets that are poorly connected. At the same time, driving distances have become longer as we've spread out more in sprawling development patterns.

Motorist and community response. To minimize time spent in the auto, drivers want to go faster and have fewer interruptions. As motorists drive faster on streets that welcome speed, residents look for tools that promise a reduction in speed. Enter the stop sign.

Early response to the domination of neighborhood streets by the car resulted in many residents lobbying for, and getting, stop signs. Some towns and cities report that 15-45% of existing neighborhood stop signs are

unwarranted. To make up the loss of time caused by stop signs or signals, many drivers speed up between intersections. Speed spiking and loss of response time results from incorrect use of these traffic tools.

Traffic calming is growing in popularity. Traffic calming is still young in America. Based on world trends, and many developing national issues, traffic calming will grow exponentially in the next decades. Smart growth, sustainable communities, desire for open space, rebuilding main streets, walkable communities, fitness lifestyles, more association with neighbors, a desire to get away from sterile neighborhoods, clean air and many other trends are pointing to significant interest in traffic calming.

In the section that follows, we explore some of the most common tools that can be used to calm traffic. We also discuss their impact on emergency responders. (For a more detailed discussion on traffic calming treatments, please refer to *Streets and Sidewalks, People and Cars: A Citizens' Guide to Traffic Calming* published by the Local Government Commission.)

Traffic Calming's Roots in America. *Radburn, New Jersey's innovative design, developed in the 1920s, was a first attempt to overcome early impacts of auto traffic. This low-speed design was later adapted for the first early traffic calming efforts in Holland and England. So, while we can trace the roots of traffic calming to the United States, it would be another thiry years before modern traffic calming would return to this country.*

1 Stop Signs

Stop Signs are not traffic calming tools

When communities lack a well thought out traffic calming program, residents often ask for unwarranted traffic control devices, such as stop signs, to be installed at inappropriate locations. Working with your community to get a balanced traffic calming program underway reduces placement of measures that might be inappropriate, such as stop signs. Good dialogue between city management, traffic engineering, elected officials and residents is essential to overcome stop sign abuse.

Average Delay: 6 – 11 seconds

Delays depend on the amount of visual screening at corners (i.e. parked cars, landscaping, buildings), as well as the weight and capabilities of the responding vehicle.

Comments:

1. Implement alternative traffic calming solutions.
2. Use curb extensions which remove some, or most of the screening at intersections and assist in response speed.
3. Consider mini-roundabouts, a superior intersection tool for many settings, that can reduce delays by 3-6 seconds.

Appropriate locations for stop signs:

Stop signs are acceptable where warranted, as specified by the Manual on Uniform Traffic Control Devices (MUTCD). An engineering study is needed to determine appropriate locations. Some cities install 20-40% more stop signs than are needed. Removing unwarranted stop signs can improve city-wide response times.

Inappropriate stop controls on emergency response routes are most critical, since they can delay responses to many locations. Work especially hard to overcome the inappropriate placements of stop signs. Curb extensions can often calm traffic while improving visibility for motorists entering streets (new sight triangles are created).

Of concern, but of lesser importance is placement of stop signs on local streets, especially in the last block or two of more remote housing.

Inappropriate use of stop signs delays response time to many locations. Work with city, state and elected officials to systematically remove inappropriate stop signs, replacing them with more appropriate tools such as mini-roundabouts that keep motorists and responders in motion. Stop sign placement should not be tolerated on collector and other primary response routes. If streets are wide, or on-street parking is needed, curb extensions improve sight distances (below). Wide streets can accomodate mini-roundabouts which can be used to make U-turns (bottom photo).

2 Speed Humps

Speed Humps are often overused

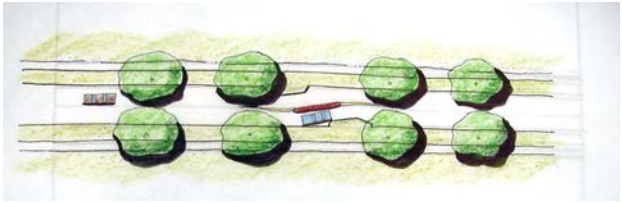
When communities lack a good traffic calming program, residents often ask for speed humps, since they are the only tool they know. Speed humps are also quite inexpensive ($1-2,000 per device), and therefore popular among budget-wise communities. However, humps in one location tend to shift the problem to parallel streets, thus requiring more humps. Speed humps can also be noisy. Working with your community to get a balanced traffic calming program underway reduces placement and inappropriate use of speed humps. Good dialogue between city management, traffic engineering, elected officials and residents is essential to overcome the overuse of speed humps. Once speed humps are in place, it is often difficult to work with residents to get more appropriate tools in place.

Average Delay: 6 – 11 seconds

Delays depend on severity of humps, location and the size, design and weight of responding vehicles. Large aerial ladder trucks with widely spaced axles take the longest to cross. There is also some evidence that humps stress equipment and create unnecessary wear.

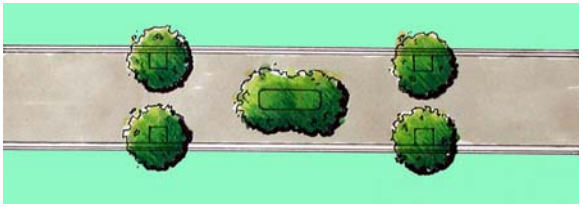
Comments:

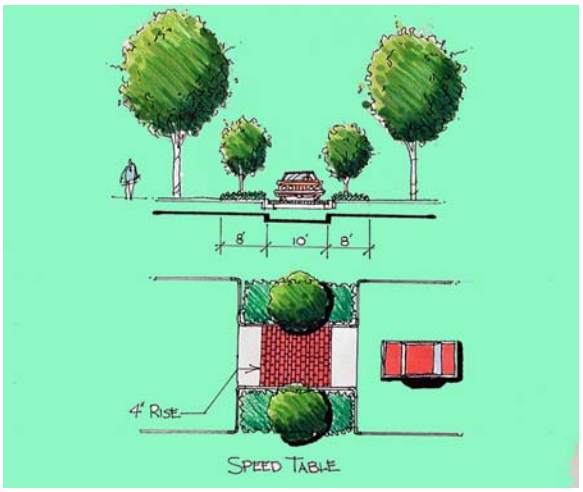
1. Implement alternative traffic calming solutions.
2. Consider using speed tables instead (page 12). All horizontal deflection tools and visual tools are preferred to vertical measures. Speed pillows (page 14) are also good alternatives.
3. On long blocks, short medians, one lane slow points, tree wells, and similar chicane effects are superior and more attractive.
4. Work with traffic engineers to allow sufficient horizontal deflection for these alternatives. If on-street parking is needed to keep appropriate deflections, do not insist that parking be removed.



Angled slow points *may be used when there is sufficient space between driveways. Fire trucks can straddle these low medians.*

Speed humps are especially abused on steep downgrades as seen in this example from Maui, Hawaii. These humps were used on a short cul-de-sac street of no more than 1,000 feet. Better solutions include tree wells (below), angled slow points (bottom left), or other tools that slip easily between driveways. When possible, suggest developers package driveways with double-drives every 200 feet or so. This design reduces the number of driveways. Presence of too many driveways eliminates effective on-street parking. Double driveways also provide 20-foot wide, or wider, operation zones near many properties. Reduction of driveways also allows greater selection of traffic calming tools. Speed tables (bottom) are easier for emergency response vehicles to navigate than humps.





3 Speed Tables

Speed Tables assist street crossings

Compared with speed humps, speed tables provide less of an impediment to emergency equipment while providing communities added value. Emergency response is slowed less than with speed humps, since speed tables have a gradual rise (1:12 to 1:20 rise), a flat area on top of at least ten feet, and then an equivalent descent grade. Community benefits include improved yielding by motorists to pedestrians and bicyclists at school crossings, bike trails and in some commercial area applications.

Average Delay: 2 – 9 seconds

Delays depend on size and weight of equipment, and overall operating speed. Delays are greater on collector streets, where running speeds are higher. Tests conducted in Portland, OR in 1995 found that 22-foot long speed humps (with a 10-foot long flat top) resulted in delays of from 0 to 9.2 seconds.

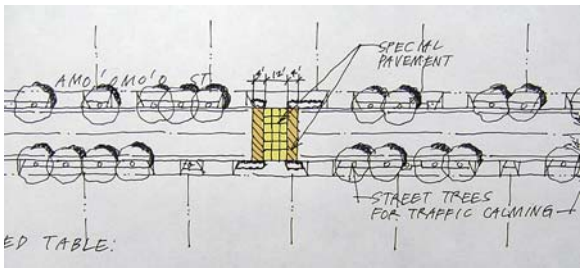
Comments:

1. Use alternative traffic calming solutions, especially medians with curb extensions that narrow travel lanes to ten feet.
2. Limit speed tables to the most vital locations, such as around schools, parks, senior centers and low speed commercial streets.
3. Use strong visual techniques such as Seminole Hump markings (middle photo, page 21) to enhance slowing, and keep vertical rise to a minimum (1:20).
4. Use markings in conjunction with imbedded roadway lights that flash when pedestrians are present as alternative to speed tables.

Appropriate locations for speed tables:

Speed tables are best used on side streets, local streets and areas not on emergency response routes. Some limited applications on emergency response routes are warranted, especially if the number of treatments is limited and has multiple benefits, such as enhancing motorist courtesy to pedestrians crossing the roadway. Speed tables are important tools on or near elementary, middle, high school and college campuses where pedestrian crossing volumes are high.

In Grand Junction. Colorado this flat-topped speed table (above) creates a level surface for pedestrian and trail crossings. Speed tables, such as this one, can be applied as the only traffic calming feature. As shown below speed tables can also be used in combination with medians, curb extensions and other treatments.



4 Raised Intersections

Raised Intersections serve as gateways

Raised intersections are superior to 4-way stop controls, which significantly slow responders. Raised intersections are most popular in downtowns, college campuses and other special locations. They are also used in neighborhoods as gateways into subdivisions. Their high cost limits the frequency and locations of these often colorful treatments. They are most often used where motorists have a history of failing to yield to pedestrians. Raised intersections are useful in tight rights-of-way where large trucks must turn and roundabouts cannot fit.

Average Delay: 2 – 8 seconds

Delays depend on length of intersections, general travel speed along the corridor, whether turns are being made, and related operational factors.

Comments:

1. Use alternative traffic calming solutions, especially mini-roundabouts, roundabouts and modified intersections.
2. Consider that intersection humps are the most expensive vertical deflection tool. They are most often used as gateways into downtowns or prominent neighborhoods.
3. Use improved, standard at-grade intersection geometrics, and provide added safety with median noses to slow left turning motorists. Also use “pork chop” islands to separate conflicts with turning vehicles.
4. Use colorful paver stones or other visual effects to slow motorists.

Appropriate locations for intersection tables:

Use as replacements to 4-way stops and other problem intersections where volumes are moderate. If volumes are higher, roundabouts provide higher performance and safety. Intersection humps are often used as gateways. When possible keep away from major response routes, especially near fire stations.

Raised intersections can be used for lower speed environments, or as gateways at the juncture of two collector streets. They can also be used where collector and local streets intersect. Raised intersections are popular in shopping districts and other locations where many pedestrians are found.

Modified intersection in Honolulu, Hawaii (below) uses horizontal deflection instead of vertical deflection. Motorists have greatly increased their courtesy toward pedestrians at this high volume intersection. Emergency responders are slowed slightly with this treatment which is located within half a mile of a fire station.

Raised intersection in Seattle, Washington (bottom).

5 Speed Pillows

Speed pillows are attractive solutions

Speed pillows are designed to force motorists to track around both sides of 3-4 inch raised islands. Speed pillows work best with additional measures such as curb extensions, landscaping and medians. Larger vehicles, such as fire trucks can straddle the pillows and hence there is little, if any, loss of time. Short wheel base ambulances may need to slow slightly, producing a 1-4 second reduction in response time.

Average Delay: 1 – 4 seconds

Delays are experienced only by smaller equipment, such as small wheel base ambulances. Larger equipment is not affected by speed pillows.

Comments:

1. These treatments are strongly preferred by responders over the delays and vertical jolt of humps.
2. Should be designed so that they are easily detected.
3. It is helpful to add curb extensions to create a narrowed ten foot opening and to provide space for landscaping. With such additional aids, it becomes easy to detect and steer vehicles into the center of the roadway. Experienced large vehicle operators can easily straddle the pillow.

Appropriate locations for speed pillows:

Speed pillows are especially effective around schools, parks, commercial side streets and similar locations. Pillows may be a preferred treatment as part of colorful gateways, and as a preferred alternative where there is a strong desire by neighborhoods to have speed humps.

Speed pillows are effective on narrow streets with lots of driveways and on-street parking and in other places where few choices for treatments other than humps exist.

Speed pillows are more attractive than humps, often adding value to neighborhoods. The pillow is softened on all edges with a graded rise. Although most motorists do not hit the pillows, they are forced to slow in order to track their wheels on each side. Vancouver, Washington tests speed pillows with fire equipment (below).

6 Chicanes

Chicanes are a series of islands

Chicanes offer designers many choices for creating horizontal deflection. All horizontal deflection tools are preferred by responders, since they don't cause vertical jolts, and speed reductions are more moderate. Chicanes can be any collection of islands forcing motorists to divert their path. These islands are more effective when landscaped ground cover and trees provide contrast. The farther away an island can be seen the more powerful the effect and the safer the measure becomes.

Average Delay: 1 – 4 seconds

Delays on local streets, where responders are already looking for house numbers, are low. These same measures on collector streets and in downtown locations are more significant, typically creating delays of 4 seconds. When chicanes are substituted for stop controls, they can speed response times by 3-4 seconds.

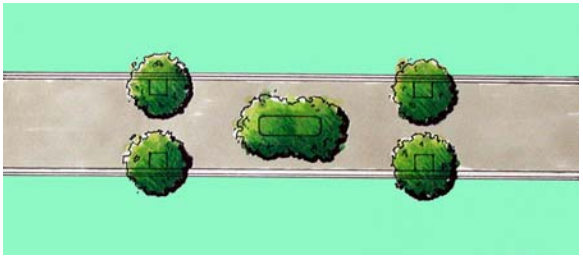
Comments:

1. These treatments are strongly preferred by responders over the delays and vertical jolt of humps.
2. Should be designed so that they are easily detected.
3. Design chicanes that create 20-foot wide openings so responders have space, away from parking, to set up for fire or medical response. It is appropriate to plan these measures in newer or rebuilt streets so that fire hydrants are placed in the same location (see lower photo).

Appropriate locations for chicanes:

Chicanes are universal tools fitting well into most places where there are not too many driveways. Chicanes work on most streets wider than 24 feet. They are popular around schools, as gateways into downtowns and neighborhoods, and at troublesome intersections. Chicanes can be effective alternatives to stop control intersections.

Chicanes are a series of islands forcing horizontal deflection and lowering speeds to 15-18 mph for autos, and 8-12 mph for large response vehicles. Chicanes are especially effective in neighborhoods and village centers, as well as most other locations. Chicanes allow intersections to be improved without addition of unwarranted stop signs. Chicanes can aid emergency responders by creating 20-foot wide, or wider, operations space where autos cannot be parked, and by permitting fire hydrants to be prominently located (see photo below).



7 Curb Extensions

Curb extensions aid many intersections

Curb extension are a fire responder's best friend when it comes to operation locations. Main streets, schools and other popular places, where parked cars block intersections or other critical operations areas, are good locations for curb extensions. Curb extensions in downtowns have little impact on through movement, and significantly improve entry to side streets by keeping parked cars away from intersections. Curb extensions come in many varieties and are often called bulbouts or neckdowns.

Average Delay: Varies widely

Delays on through movement, if any, are typically very minor. In many applications, curb extensions aid responders by keeping parked cars away from corner entries. In some cases, responders will need to wait for cars to exit or back up in order to swing wide to enter a street.

Comments:

1. Use curb extensions where motorists routinely park too close to intersections.
2. Curb extensions remove some or much of the screening at intersections and assist in response speed.
3. Mini-roundabouts or roundabouts are other intersection tools for many settings. They keep delays to moderate levels.
4. Higher volume side street locations require additional assurance that larger vehicles do not have to cross over the center line to make their entries.
5. Right-hand turns are the most critical. If neckdowns are used, place curb extensions on the right side of the street to be entered (see middle photo).
6. Curb extensions provide good places to install fire hydrants away from parked cars and in easily identified locations.

Appropriate locations for curb extensions:

Curb extensions are effective in locations with high volumes of pedestrians, where parking is scarce, and where 20-foot wide operations space is needed for fire operations. They work well in downtowns, around schools, institutions, college campuses and other similar locations.

As downtowns, schools and other critical areas become log-jammed with parking, curb extensions come to the rescue. Through-speeds are maintained, and turning speeds can be greatly enhanced. Chico, CA fire responders (below) demonstrate that a simple curb extension (area of cones) that prevents motorists from parking near the intersection, can increase entry speed by 60-90 seconds. Curb extensions are not only effective at street entries, but at hydrant locations (bottom), since they keep motorists from blocking hydrants and fire operation areas.

8 Curb Radius Reductions

Slowing cars as they enter streets

Many towns have not used sufficient care on street entries. This oversight creates high speed entries into neighborhoods and endangers pedestrians trying to move along collector or arterial streets. Curb radius reductions are similar to curb extensions, but they often have a stronger mission to perform; they help lower entry speeds to safe levels and allow safe pedestrian crossings. Motorist turning speeds are typically reduced from 20-30 mph to 10-15 mph. Curb radius reductions aid responders by assuring that parking will not occur at these locations.

Average Delay: Varies widely

Creating tighter corners most often reduces entry speeds during right-hand turns, but has no effect on left-hand turns. In many applications, curb radius reductions aid responders by keeping parked cars away from corner entries. In some cases, responders will need to wait for cars to exit or back up in order to swing wide into a street.

Comments:

1. Use curb radius reductions where motorists routinely park too close to intersections.
2. Curb extensions remove some, or most of the screening at intersections and assist in response speed.
3. Mini-roundabouts, or roundabouts, are other intersection tools for many settings. They keep delays to moderate levels.
4. Right-hand turns are the most critical. Work with traffic engineers to make sure that your largest vehicles can still access neighborhoods. This may require crossing over the center line of the street you are departing.

Appropriate locations for curb radius reductions:

Curb radius reductions are effective in locations with high volumes of pedestrians, where parking is scarce and, around schools, institutions, downtowns, college campuses and other locations.

Designers have been negligent in allowing wide sweeping curb radii in many locations. This design creates unsafe and unfriendly conditions for pedestrians. Proper channelization of motorist movements may create momentary delays for some responders (on right turns), but serve as an important aid to control vehicle parking and turning speeds. The photo below shows an overly wide entry. Adding islands to reduce the corner radius would also provide an appropriate location for hydrants. Consider more appropriate turning radii in new neighborhood designs. Truck turning templates can be used to assure that all vehicles can enter safely. Radius reduction in Honolulu, HI (bottom photo).

9 Gateways

Gateways slow entry speeds

Well designed gateways can reduce speeds by narrowing lanes to ten feet and visually tightening the space of entry. Skilled responders know their speeds are unimpeded. In some cases, gateways improve response times by preventing motorists from parking in critical locations near intersections.

Average Delay: Varies widely

Depending on design, gateways reduce entry speeds from right-hand turns and have no effect on left-hand turns. If gateways are set back 20 feet or more from intersections there is no loss of speed.

Comments:

1. Use gateways where motorists routinely park too close to intersections.
2. Gateways should be designed to minimize visual screening, thus assisting in response speed.
3. Gateway medians are designed to reduce entry and exit speeds to make streets less attractive to through traffic.
4. Right-hand turns are the most critical. Work with traffic engineers to make sure that your largest vehicles can access neighborhoods. This may require crossing over the center line of the street you are departing.

Appropriate locations for gateways:

Gateways can be located at entries to downtowns, main streets, institutions, schools and neighborhoods. Gateways tell motorists that they are entering a special place and that they need to behave in a civil manner. In many settings the gateway can be set back to allow for turning speed entry. In addition, median islands can be designed to allow effective turning movements. At many gateways, median islands are moved forward to protect pedestrians crossing the street. Effective design incorporates the needs of motorists, bicyclists and pedestrians.

Gateways are places of adjustment. All great towns, institutions and neighborhoods greet people while letting them know that they should alter their behavior to avoid endangering lives. Gateways can assist responders by assuring that physical openings are not blocked by parked cars. Most responders know that gateways offer sufficient lane width and that they can enter unimpeded. Strong vertical landscaping treatments are appropriate at gateways.

10 Mini-Roundabouts

Mini-Roundabouts reduce crashes

Mini-roundabouts provide excellent counter-measures to the proliferation of stop signs. Although all emergency responders must slow, the reduction in speed, in contrast to stop controls, is minimized. Seattle, Washington has over 900 mini-roundabouts on the ground. They have reduced crashes by 70 to 93% over ten years while allowing emergency responders to move at acceptable speeds. Yield signs, not stop signs, should be used with mini-roundabouts. These treatments are safer for responders than 4-way stops.

Mini-roundabouts can be used to replace stop signs in many neighborhood locations. Seattle and many other northwestern towns are proving that these tools are effective and safe alternatives to stop controls. Mini-roundabouts are especially helpful in reducing conflicting speeds. They have been shown to reduce crashes by 70-93%. Note in the photo below that small splitter islands are used in larger intersections. Large vehicles can turn across the face of the roundabout, mounting the low concrete splitter island. In many cases response times are improved. Make certain that designs prevent parking close to these treatments.

Average Delay: Varies widely

Most often mini-roundabouts improve response times when compared to neighborhood stop signs. There is no significant impact on left- or right-hand turns (left turns can be made across the front of the roundabout, just as with standard intersections). Through movements are slowed by 3-6 seconds. Since most mini-roundabouts are on local streets, where responders are already searching for house numbers, delays are minimal. When used on collector streets, delays can be up to six seconds. Motorists should not be allowed to park close to intersections where they might block entry to the street.

Comments:

1. Where motorists routinely park too close to an intersection roundabouts may require additional measures.
2. Right-hand and left-hand turns are largely unaffected. Use curb extensions to prevent parking too close to the intersection.
3. Left-hand turns can be made across the front face of mini-roundabouts. Note that the white concrete splitter island in the photo to the right is mountable. Smaller mini-roundabouts do not use these islands, making entries even easier.

Appropriate locations for mini-roundabouts:

Best locations are in neighborhoods and small commercial settings. Mini-roundabouts are safer, more attractive and more functional alterations of intersections than stop controls. All entries are under yield control.

11 Roundabouts

Roundabouts are powerful and safe

Roundabouts are the most effective (and sometimes controversial) new tools for intersections. Roundabouts are proving to be safer, more efficient tools for moving traffic through intersections with minimal delays. Replacing intersection signals with roundabouts can significantly reduce, or eliminate, traffic queues. Some roundabouts reduce average wait times from 12-50 seconds to 2-6 seconds. Roundabouts are also gaining popularity for aesthetic reasons. They can reduce noise and pollution levels, and help pedestrians cross streets safely and efficiently.

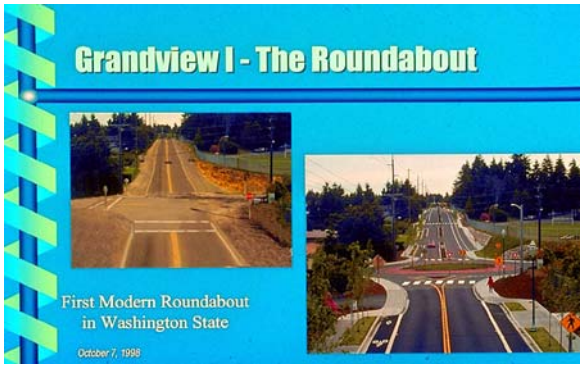
New roundabout built in Salt Lake neighborhood in Honolulu, Hawaii (above). Parents driving their children to this neighborhood school were creating havoc. The roundabout handles vehicles of all sizes and even permits the largest vehicles to make U-turns. Pre-roundabout congestion forced many parents to drive their children to school. Today, many children travel on their own. The Grandview Avenue roundabout opened in University Place, Washington (bottom photo), ending years of quarter-mile backups at the 4-way stop it replaced. A local fire station was aided significantly by ending the long queues.

Average Delay: Varies widely

Some roundabouts improve response times by eliminating stacking of vehicles during red traffic signal phases. In the Grandview case (bottom photo), quarter mile long traffic queues lasting for periods of an hour were eliminated by the more efficient roundabout. Today, the same road finds queue lengths of no more than six cars. Through-movements for emergency responders at roundabouts are similar to those at intersections with signals and stop controls. Left-hand turns may take from 2-10 seconds longer. However, U-turns are easily made.

Comments:

1. Roundabouts eliminate the possibility of motorists parking too close to intersections.
2. Roundabouts may be inappropriate in areas where traffic backs up from other signalized intersections. Consider other intersection designs for these locations.
3. Most roundabouts are designed with truck aprons so rear wheels of large trucks can be accommodated.



Appropriate locations for roundabouts:

Roundabouts work in a variety of settings. Although cities are just beginning to install them, most are being placed on wide local streets, collectors and arterial roads carrying no more than 25,000 autos daily. Roundabouts are also popular as gateway entries to downtowns, neighborhoods and commercial districts. Roundabouts are proving to be powerful allies to access management. Generally, they are first located in towns or villages on roads with 20,000 ADT or less. Once drivers get used to them, two-lane roundabouts can be applied to intersections with as many as 50,000 vehicles per day.

12 Medians, Landscaping

Medians slow traffic and improve safety

Medians and landscaping features are attractive and functional traffic calming tools. Medians slow traffic on curves, prevent unsafe access to streets from commercial and residential driveways, and provide refuge for pedestrians wishing to cross streets.

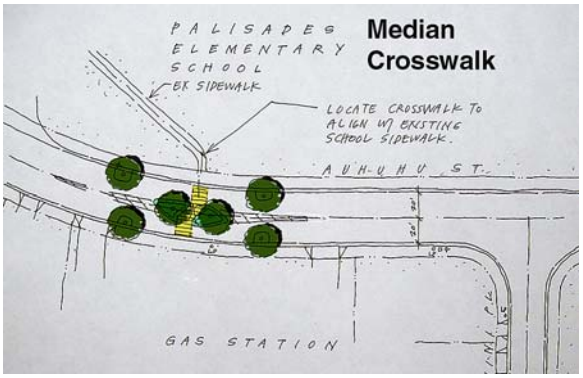
Refuge islands are short medians. Well placed short medians slow motorists on long streets and minimize delays for emergency responders. Long medians can have mountable areas which allow responders to get to the other side of the street. Landscaping features enhance many traffic calming treatments, allowing motorists to detect the change hundreds of feet away. Long medians on 2-lane streets must include bike lanes, to provide motorists with space to pull over when a responder goes by. Bike lanes and medians also add more effective turning radii on corners, making it easier for large vehicles to maneuver.

Average Delay: Minimal or None

Most medians create visual change, tighten a lane to ten feet, but keep the responder moving at safe, uniform speeds. Responder speeds on collector streets are usually not affected by medians. On local streets, short medians may also include horizontal deflection which can slow the responder by an average of 3-6 seconds.

Comments:

1. Include bike lanes if median is longer than 500 feet.
2. Speed tables can be added around schools, parks and other pedestrian destinations.
3. On long blocks, short medians, one lane slow points, tree wells, and similar chicane effects may work better than medians and can be just as attractive.
4. Work with traffic engineers to allow sufficient horizontal deflection for these alternatives. If on-street parking is needed to keep appropriate deflection, ensure that parking is not removed.
5. When necessary, medians can be designed so that large vehicles can drive over them in an emergency.
6. Medians can be designed to allow access for wheelchairs by creating a pass-through at grade. To increase safety, the pass-through should be designed with a 45-degree angle so pedestrians are looking at oncoming traffic (as shown in the middle photograph).



Medians are used in many settings to reduce speeds and to make it easier for pedestrians to cross the street. Medians which are short (50-100 feet) are referred to as refuge islands. It is best to narrow travel lanes to 10 feet each, thus creating a visual tightening, known as a choker. This 10 foot width is more than adequate for a trained responder. Medians with landscaping features (as shown above) are one of the best overall safety features in traffic calming, and are very popular around parks, schools, libraries, downtowns and other areas where pedestrians are critical to the life of the town or neighborhood. A median with seminole humps (below).

13 Street Closures

Street closures should be avoided

When communities lack a traffic calming program or knowledge of other choices, residents often ask for street closures to have the benefits of a cul-de-sac style street. This shifts traffic onto other streets and denies critical access. Except in rare settings, street closures can have very negative effects. Closures should only be used as the last resort.

Average Delay: 60–240 seconds

Delays depend on the additional distance a responder must cover to reach the same destination. Even when block lengths are short, street closures force the responder to detour by one or more streets.

Comments:

1. Use alternative traffic calming solutions.
2. Virtually all other tools are preferred.
3. Use partial closures instead.
4. When essential to use a full closure, insist that pedestrian, bicycle and emergency access be retained.
5. Breakaway bollards and other landscaping materials can be used to prevent motorist entry while allowing emergency access.

Appropriate locations for street closures:

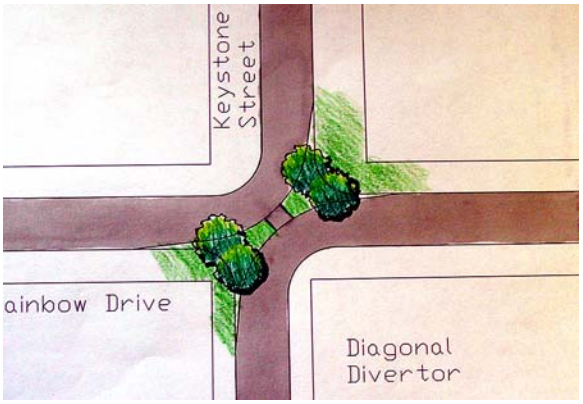
Street closures may be appropriate for some school, park and entertainment areas. These can be temporary or permanent closures. In the scene above, for example, the school and field are connected by denying street access to motorists during school hours. In an emergency, responding vehicles can knock over the bollards and enter. In some cases, when residents support this loss of access, temporary closure of school streets can become a permanent measure. Wider applications of street closures should be avoided in most cases. The negative effects on a community can be very powerful and long-lasting.

Temporary street closures may be warranted near schools, parks and entertainment districts. Emergency responders are not delayed if bollards are designed to be knocked down. In other cases these same locations may be appropriate for permanent street closures. However, emergency access must be maintained. Partial closures and extreme neckdowns are another alternative (see below).

14 Diverters

Diverters rechannel traffic

Equal and fair distribution of traffic sometimes calls for treatments forcing motorists back to the principal roadway. Although diverters are rarely used, they can be effective when cut-through traffic needs to be sent back where it belongs. Diverters can be designed so that response vehicles can drive over them. Diverters are not always popular with residents because the people living in a neighborhood are impacted the most. Median closures and other diverters benefit bicycling and walking by diverting motorists away from a particular route.



Diverters can be diagonal, star or other shapes. Diverters should be mountable for emergency responders and allow passage to bicyclists and pedestrians. Diverters are most often placed inside a neighborhood, especially on local streets. In other cases they are placed on avenues, collectors or other boundary streets, to keep traffic from cutting through a neighborhood.

Average Delay: 6-120 seconds.

Delays depend on whether emergency access across the diverter is permitted, or not. When an opening has been left for a responder, times remain similar, with a 6-10 second delay. However, if emergency access is not designed into the measure, delays can be as severe as with street closures. Median closures (bottom photo) divert motor vehicle traffic but may not impact emergency responders.

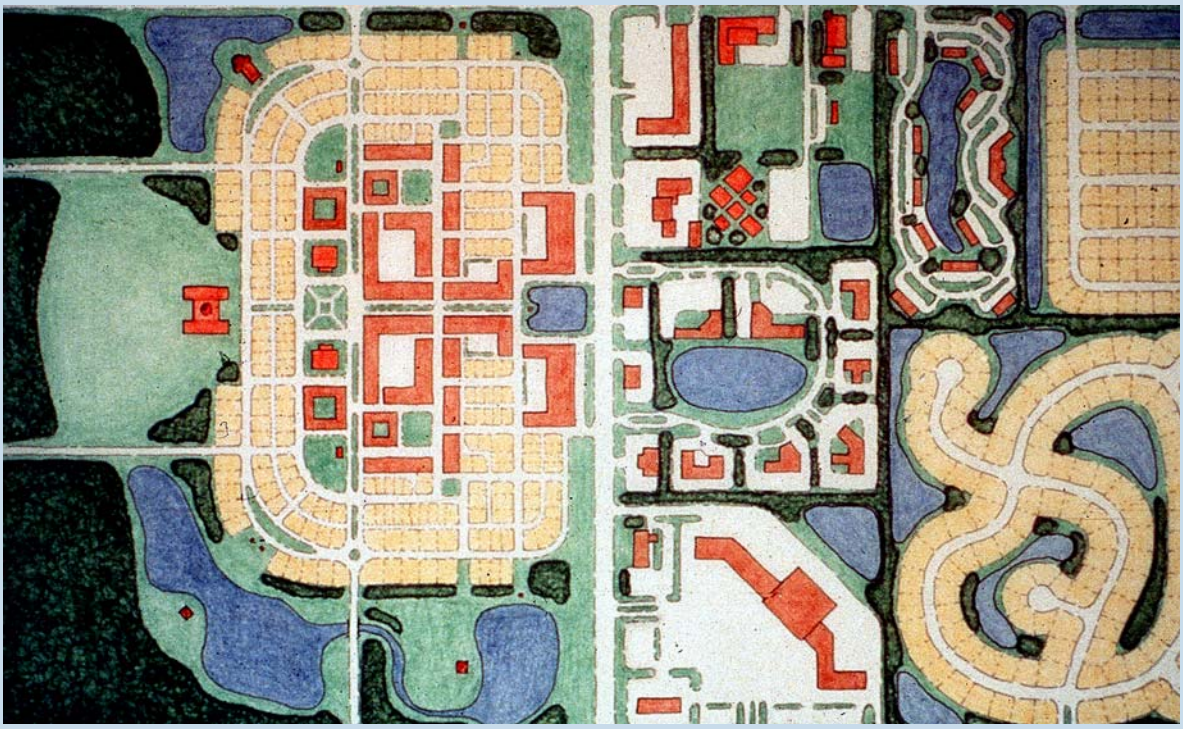
Comments:

1. Fix the principal road to lower cut-through traffic.
2. Use alternative traffic calming solutions.
3. Most other tools are preferred.
4. Use partial closures and neckdowns instead.
5. When essential to use a diverter, insist that pedestrian, bicycle and emergency access be retained.
6. Breakaway bollards and other landscaping materials can be used to prevent motorist entry while allowing emergency access.

Appropriate locations for street closures:

Diverters are helpful when there are no other effective tools for eliminating cut-through traffic. Most residents report that they are less concerned with volume and more concerned with speed. Hence, speed control measures may be sufficient in most cases. Bicycle boulevards (freeways for bikes) can be charted through a neighborhood, taking out stop signs, and diverting traffic. The bottom photo illustrates such an application.

PART THREE: TRADITIONAL NEIGHBORHOOD STREETS



Drawing Courtesy of Ramon Trias

Traditional **Conventional**

Lower speed roads, improved access

Emergency response times are often slowed in conventional sprawl pattern communities, especially with long cul-de-sac streets. Older, traditional neighhborhoods, and new smart growth communities offer far more links and approaches. Principal roadways are designed with similar high speed access, but local streets include tighter turning radii, reduced centerline curves, more on-street parking and narrower lanes and streets. Alleys are often provided, yielding two more points of access to properties. In a well-planned new traditional neighborhood, fire and medical access speeds can be kept the same, or improved. In contrast to the conventional pattern on the right, which has only a few points of access to more than 200 properties, the traditional pattern on the left has nine points of access to the same number of properties. Responders stay on main streets longer and are able to hold their speed. Multiple routes of approach help emergency responders in many ways.

Introduction to Traditional Neighborhood Development

Many planners and elected officials recognize we cannot build our way out of the traffic-spawning suburban development pattern. But what do we do? Increasingly, we are seeing the design of neotraditional or new urbanist neighborhoods that incorporate pre-suburban development features. These new neighborhoods are modeled to look a lot like historic neighborhoods with walking scale streets and lots of street connections.

Several real estate studies reveal that home buyers tend to like streets with low traffic volume, slow traffic speeds and minimal noise. Families with children want neighborhoods with nearby parks, schools and other activities while retired "baby boomers" are looking for sidewalks, trails, greenways and convenient services. The traditional pattern of development meets many of these requirements. It allows up to 40% of all trips to be made by walking, bicycling and transit. These new (old style) traditional neighborhoods also call for a new set of street standards. Blocks are shorter, streets and lanes are narrower, alleys are included, and on-street parking is encouraged.

In some towns, fire administrators sometimes oppose the traditional model because of their concern over narrower streets, tighter turning radii, on-street parking and other features. However, in order for these neighborhoods to work and insure the safety of their residents, it is critical that town officials, fire administrators and developers work in partnership to understand the proper combination of features.

A properly built traditional development has many added points of access to streets, more access to each home (with alleys, 4 points of access), and often better built homes that are less prone to fires. Most important, the streets in a traditional neighborhood will not require any traffic calming measures, since motorists will feel uncomfortable driving faster than 25 mph.

Fewer stop signs, greater number of access points and more direct routes of travel, aid residents and emergency responders to access properties in a timely and efficient manner. Meanwhile, design of these streets is becoming a more exact science. Designers must anticipate not only ways to keep traffic moving slowly, but to allow access by large equipment to all locations.

Metro Square, in Sacramento, California (top two photos) is an example of urban infill using a compact, village style design. While housing density (20 units per acre) is high, the quiet, low-speed street design supports all types of access. These units were sold in one day. The new style of streets in traditional village design must be more exact so that conventional fire and sanitation equipment is supported. The radii on this park in Mountain View, California (bottom photo) is too tight for this pumper truck to get through when a car is parked near the curve. A simple modification to the park design would have allowed the truck to turn.

Satisfying the Needs of Residents and Responders

Traditional Neighborhood Development (TND) streets must meet the needs of all those making use of them. Traditional streets require high levels of connectivity. Their performance must be measured on how well they provide multiple points of access, parking, room for fire operations and low speed travel.

Keeping in mind that alleys, lanes and streets are each local in purpose and character, speed is not the issue. To meet the many demands of the community the streets must generate low speeds and allow for on-street parking, while creating minimal delay.

A review of these four photos can help us think about parking access, operations and speed on older traditional and newly built TND streets.

1. San Luis Obispo, California. In the first TND street photo, the built street is 36 feet wide. Faced with over 30 feet of operating space motorists are inclined to speed.

2. Everett, Washington. Parking lanes are provided on each side of the street. The painted parking line keeps motorists operations confined to a 20-foot wide operating space. Speeds are a little high here. Removing the painted center line has the potential to reduce speeding.

3. Victorian Harbor. Suisun City, California. Photo three of a TND built in the mid-1990s shows a better solution. The street is 20 feet wide with curb and gutter. Parking is inset, with pockets on each side at various locations. Housing density runs about 8-10 units per acre. This neighborhood has alleys, so most resident parking is off the street. The proximity of trees and a roundabout that terminates a driver's view keep speeds to about 20 mph. Fire operations have the necessary 20 feet. Hydrants are protected from intrusions by parked cars by locating them on curb extensions.

4. Orenco Station. Hillsboro, Oregon. Photo four illustrates a new neighborhood that will have densities from 11-15 units per acre. Although this neighborhood also will have alleys, the higher densities call for more on-street parking. Note that the operating width is about 20-22 feet, with curb extensions to insure that no one will park at the hydrant.

Skinny Streets and How They Work

In a traditional neighborhood, skinny streets are sometimes found on short, low density residential streets. Instead of cul-de-sacs, two final driveways can be set across from one another in a hammerhead fashion to permit informal turning. Skinny streets by definition are very narrow, often as narrow as 20 feet in the U.S. and 10 feet in Australia and Europe.

Skinny streets are sensitive to people and to the environment, yet they allow a full 20 feet of operations for fire equipment. A street of 200 to 700 feet in length may serve from 20 to 70 homes.

Parking is not normally allowed on a skinny street. Informal parking may occur off the street. In the scene depicted in the top photo a skinny street in Palatka, Florida makes use of a shallow curb. The street dead-ends with a set of two driveways to permit turning. Water percolates through brickwork, or runs off the roadway into the sandy soil. Due to the very low number of houses (20) traffic remains very light, hence sidewalks are not used.

While the traditional skinny streets shown above are quite narrow and keep cars from speeding, they are designed to provide access to emergency responders. Blocks are relatively short in traditional grid pattern neighborhoods and emergency responders often have multiple points of access.

In contrast, looking from the above street across the 2-lane arterial road we see that the same width street is used. However, a higher number of households calls for a double set of sidewalks. The street remains skinny. Parking is still not permitted. Just as with the brick section, water runs off the asphalt across the low curb and percolates into the sandy Florida soil.

Skinny streets should be seen as long driveways that provide good access to the few properties served. Designs are for low speed travel of 15-20 mph. Skinny streets are especially popular in semi-rural areas, but can be found in highly developed urban areas such as in Portland, OR.

Skinny streets make it possible to upgrade older dirt or crushed stone travelways with a more permanent and structurally sound base at an affordable cost and with minimal environmental impact.

Skinny streets should be 20 feet wide, or have a solid walkway that can support the occasional need for an aerial ladder truck and related fire fighting operations. Skinny streets are not built in locations where long or even moderate distances must be traversed.

In Australia and Europe skinny streets are common. Ten foot wide streets are popular and built in many locations. These streets have short blocks and often have inset parking, and appropriately spaced locations for fire operations.

Traditional Neighborhood Travelway Vocabulary

Traditional streets allow timely response. This response is based on the proximity of the lane or street to avenues and boulevards that permit higher speeds of between 30 and 45 mph.

Traditional streets contrast sharply with conventional streets that often end in cul-de-sacs. Quite often, responders making their way through a conventional neighborhood must travel on one, or several, long or very long local streets. These streets often take the responder up to half-a-mile away from a collector street.

This plan of Fairview Village, a new traditional neighborhood in the Portland, Oregon region shows a mix of uses, a variety of street types, and multiple connections.

Traditional streets are designed for 20 mph travel. They have short blocks, multiple connections, tight corner turning radii, and tight centerline curves. These streets are close to the primary route of entry and higher speed roadways so very little time is lost. Thus, most traditional street patterns allow the responder to reach most houses faster than with higher speed roads in conventional suburban neighborhoods.The building blocks for these traditional neighborhood travelways include:

1. Trails: Connections to other neighborhoods and avenues that are designed primarily for walking and bicycling, but can provide additional access for emergency responders. Maximum speed 15 mph.

2. Alleys: Alleys add two additional points of access, but cannot be traversed at more than 15 mph. Two-way access is provided to all properties. Some parking may be included. In traditional neighborhoods, houses may have additional rooms or dwelling units overlooking the alley.

3. Lanes: Lanes can accommodate one-way or, more typically, two way travel, with parking on one side only. Lanes are designed for 15-20 mph speeds.

4. Streets: Traditional streets provide two-way travel and at least two points of access on all but the last block of a corridor. Speeds are designed for travel at 20 mph. Parking is provided on both sides of the street. Since most cars are parked in the garage or driveway, only a few cars will typically park on the street. Streets would be less effective if parking were restricted to one side. If parking on only one side of the street is desired, lanes should be used instead.

5. Avenues: Added width allows for turning lanes, medians or a combination of turning lanes and refuge islands. Bicycle lanes are essential to the success of avenues, allowing motorists to pull out of the way of emergency responders. Avenues can be designed with or without on-street parking. Design speed is set at 30-35 mph.

6. Boulevards: Multi-laned two-way streets providing emergency response speeds up to 45 mph. Boulevards take advantage of medians, well designed intersections and easy access to neighborhoods.

7. Parkways: Multi-laned highways with medians and highly restricted turning movements. Emergency responders have high levels of access into neighborhoods, and high speed access to these locations.

In the section that follows we discuss these different travelways and their impact on emergency response in more detail.

1 Trails, Links

Trails reduce auto trips, increase access

Multi-use trails and protected open space are highly desired elements in today's neighborhoods. Although everyone wants these trails and open space, not everyone is sure that they want them in "their backyard." Hence, it is easier to design new neighborhoods that incorporate these elements than to retrofit existing suburban neighborhoods. When these new points of access are provided, insist that they complete vital responder links to properties that may be hard to get to.

Disadvantage to Responders: None.

Trails add new connections, and in some cases allow additional operations space for hard-to-reach buildings.

Comments:

1. In most settings it is possible to gain access through short links of 100 to 300 feet. Porous materials such as open block, finely crushed stone or other pavers, can be used to alow water infiltration.
2. In some cases, bollards are used to prevent motorist access. However, bollards are rarely needed. A sign and low curbing keeps motorists from attempting illegal entries.

Appropriate locations for trails:

Trails and links serve as vital connections to schools, parks, libraries and other civic buildings, as well as connection points to stores and neighborhoods. Although trails are built to structural loads of small maintenance vehicles only, short sections can be enhanced for large emergency response vehicles. A good selection of trails and links can reduce residents' dependence on motor vehicles for many trips. Added benefits include protection of open space, access to recreation for residents of all ages and increased property values.

Environmentally sensitive communities like Village Homes in Davis, California (above) are seeking ways to build added bicycle, walking and emergency access. This is easily accomplished in new neighborhoods by requiring these added links. In older suburban neighborhoods such links can sometimes be made through easements. If necessary, surfaces of trails can be stabilized for emergency responders.

Every effort should be made to provide links from residential areas to nearby amenities such as parks, shopping centers, schools and transit stops.

2 Alleys

Alleys increase access and parking

The modern alley is designed to get the garage off the front of the house. This allows houses to be closer to the street and to include neighborhood-friendly features like a front porch. A well designed alley is clean and attractive and provides options for parking, underground utilities, and trash pickup. Alleys also create opportunities for affordable housing by allowing the developer or owner to build an accessory unit above the garage.

Disadvantages to Responders: None.

Alleys add two additional points of access to each property. Distances to carry equipment are reduced. Alleys can also provide more direct access to kitchen fires and other hard-to-reach points located in the rear of the home.

Comments:

1. Widths of ten feet (paved or unpaved) are common for alleys. Short paved drives into garages with setbacks of 7 feet allow the responder nearly 24 feet of operations.
2. Parking should be allowed only in acceptable locations, both in the garage, in narrow spaces between garages, and in some specially dedicated open lots. Random parking should be discouraged through design.

Appropriate locations for alleys:

Alleys are generally found on short blocks of 200 to 400 feet. They become less practical on long blocks. Alleys are ideal in most traditional and neotraditional neighborhoods, and in many portions of these neighborhoods. Alleys allow two-way travel. Although in some cases it is possible to have two alleys meet as a tee intersection, these need to be wide enough for truck turns. Terminating an alley at a tee intersection of a street works best when there are curb extensions to prohibit parking on the street. More often, alleys are part of the traditional grid street pattern.

Smart Growth communities are seeking ways to reduce the impact of driveways, locate useful places for utilities, and add low cost housing. Modern alleys make it possible to have more functional streets. Trees can be planted on streets and lanes without impacting utilities. Alleys are a boon to emergency responders, giving them more options for access and operations. Alleys can range from a width of 10 to 20 feet. Narrow widths call for garage setbacks of seven to ten feet to allow motorists to turn into garages.

3 Lanes

Lanes provide low speed access

Lanes are 18 feet wide, two feet below the desired operating space for fire fighting operations. Parking in a lane is restricted to one side. The added space needed to extended aerial operations may be addressed in several ways. Some responders say that they can operate in the slightly reduced width of 18 feet. Others state that they can operate with an occassional double set of driveways. This assures a solid base of more than 20 feet of street width and at least 30 feet of width between structures. And some fire departments report that a sidewalk that is attached to the curb or a reinforced driveway provide enough structural support for heavy equipment

Disadvantages to Responders: Low speed.

Lanes are considered the safest street type available because travel speeds are kept below 20 mph. Hence they are very popular in traditional neighborhoods. To allow fast response, lanes are always limited to several blocks in length, and can be easily reached through faster collector and sometimes arterial streets. As a result, most or all homes on a lane can be reached quickly.

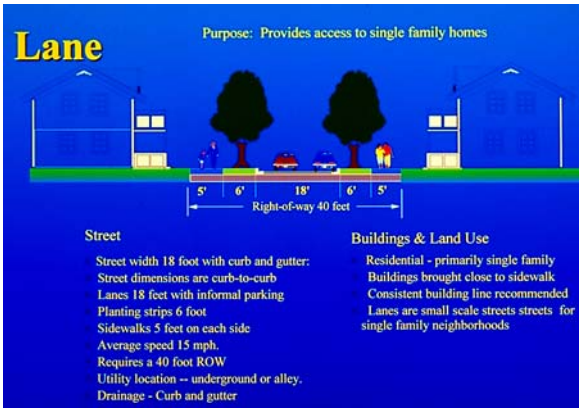
Comments:

1. Lanes are not generally permitted in conventional neighborhoods
2. Lanes are not permitted in difficult to access locations, such as the interior of a large neighborhood.
3. Parking is restricted to one side of the street. Developers should build double sets of driveways every 200-300 feet to permit sufficient operations space.

Appropriate locations for lanes:

Lanes are permitted in portions of a traditional neighborhood that are easily accessible from a principal travel way. Since most traditional neighborhoods, by definition, have multiple points of entry, lanes may be found in most locations of the neighborhood. Lanes are not as appropriate for conventional suburban development, especially if they are in locations that are difficult to access.

Lanes are short access ways with parking. *Lanes are 18 feet wide, or slightly narrower. Parking is always restricted to one side of the street. Sidewalks are often included. Traffic volumes are very low, due to the short block lengths of 500 feet or less and the short number of blocks (2-3 maximum before a collector category roadway). Fire administrators should seek a protected no parking space every 200-300 feet. The best way to assure this operations space is to have the developer commit to a double set of driveways at those locations.*



4 Streets

Streets provide access, more parking

Streets in traditional neighborhoods are typically 26 feet wide, curb to curb, with parking on both sides of the street. Motorists must share the travel way. Streets and lanes have proven to have the highest safety levels of any travel way. Speeds of 20 mph are common. Just as with lanes, streets must establish an operations area for emergency responders every 200 to 300 feet. This can be done by placing a tree well 6 feet wide and 30 feet long on one side of the street and a double set of driveways on the other. The hydrant can be placed in the extended tree well (see pages 15 and 37 for samples and details).

Disadvantages to Responders: Low speed.

Streets, like lanes, are designed for slow speed travel, so speeds will have to drop as responders enter a neighborhood. However, because streets and lanes are short and have multiple points of access, delays are often minimal. Overall response times to streets can be maintained through a well designed site plan.

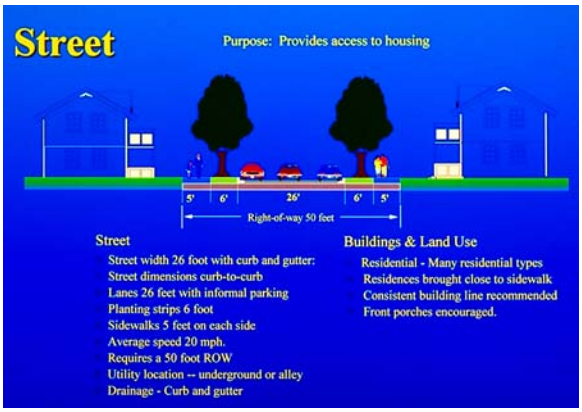
Comments:

1. Traditional narrow streets are not generally permitted in conventional neighborhoods
2. Traditional streets are not permitted in difficult to access locations, such as the interior section of a large neighborhood.
3. Parking is restricted every 200 to 300 feet to allow for emergency operations. Developers can package double sets of driveways and tree wells every 200-300 feet to permit sufficient space for emergency operations.
4. Provide alleys in the design to absorb most of the parking for residents. In that way, on-street parking will typically only be used by guests and overflow parking.

Appropriate locations for streets:

Streets are permitted in portions of a traditional neighborhood that are easily accessible from a principal travel way. Since most traditional neighborhoods, by definition, have multiple points of entry, streets may be found in most locations of the neighborhood. Traditional streets are not as appropriate for conventional development, especially in isolated locations.

Smart Growth communities are seeking ways to build low speed streets with abundant on-street parking, thus minimizing off-street parking and auto storage. The emergency responder requires a 20-foot wide space for fire fighting operations every 200-300 feet, and preferably on entry corners and at a mid-block location. A double set of driveways across from a tree well assures no parking in these areas. This neo-traditional Seattle street (below) provides a "no parking" space next to the tree well.



5 Avenues

Avenues keep traffic moving

Avenues are higher speed travel ways servicing streets and lanes in traditional and conventional neighborhoods. Avenues have sufficient width and storage space to keep traffic moving. To maximize capacity, avenues should be designed to keep speeds at 30-35 mph. Avenues often support higher density housing like townhouses, apartments and other multiple family dwellings, as well as retail and other commercial mixed use buildings. Entry streets to new traditional neighborhoods are often designed as avenues. Avenues often have gateways and can have tremendous carrying capacity, often moving 10-20,000 vehicles daily.

Disadvantages to Responders: None.

Avenues add new connections, keep traffic moving and in some cases allow additional operations space for hard to reach buildings. In traditional development, avenues may have only two lanes, with either a third lane for turning movements, or a median, turning pockets and bike lanes.

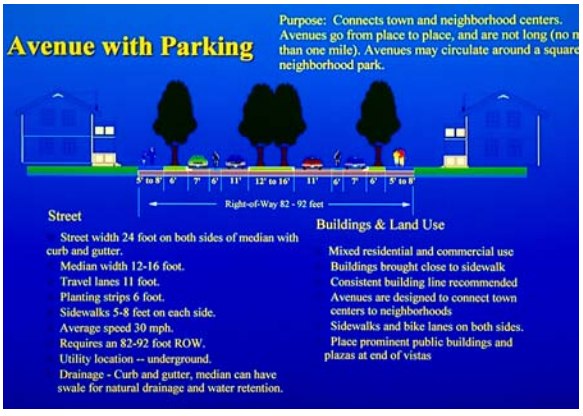
Comments:

1. Avenues provide essential speed and movement for responders. They are well connected to other avenues and boulevards, with some streets and lanes branching from appropriate locations.
2. When roundabouts are used on avenues, speeds can be kept to proper levels and corridor travel times can be improved by reducing congestion typically found at signalized intersections.

Appropriate locations for avenues:

Avenues are the engines that permit streets and lanes to be workable. Avenues should be placed every 8 blocks, or more frequently, to permit easy and efficient access to lanes and streets. Avenues can have on-street parking and bike lanes and also serve as transit corridors. As a general rule, a resident should not have to walk more than four blocks to reach transit service.

Faster speeds (30-35 mph) on avenues are assured with appropriate design. A typical section has two lanes, a median with left turning pockets or a third lane. Bike lanes are essential if medians are more than 150 feet long. Bike lanes create more turning radii, better sight distance and allow motorists to pull into them to let the responder pass. Avenues are often well landscaped to create a sense of place. When used as gateways into a neighborhood center they provide a sense of arrival. Avenues owe their success to well-designed intersections that keep traffic moving.



6 Boulevards

Boulevards are one of the big traffic engines

Boulevards can include up to six lanes, but typically are four lanes, with extra lanes at intersections. Boulevards often carry 20-40,000 vehicles per day, and at times up to 60,000. New boulevards are designed to be bicycle- and pedestrian-friendly, and include medians, refuge islands, bike lanes and transit. Boulevards easily manage traffic at 30, 35, 40 and 45 mph, based on adjacent land uses. Well-designed boulevards have limited access, so as to maintain roadway efficiency and improve safety.

Disadvantages to Responders: None.

Boulevards provide essential speed and movement for responders. They are well connected to avenues, with some streets and lanes branching off from appropriate locations.

Comments:

1. Stopped conditions on boulevards are minimized. Stop sign controls are never used. If signals are used, fire truck activated signal controls (Opticom style) will help keep responders moving.
2. Roundabouts may be a preferred intersection treatment to keep the traffic queues empty at most or all times.
3. If continuous medians are used, bike lanes are essential, to provide a space for motorists to pull into to let responders pass.

Appropriate locations for boulevards:

Boulevards are often laid out on a classic one mile grid, and in challenging geography often follow river valleys or lake shores or ridge lines, and provide high levels of connectivity to avenues and other streets. Used in this fashion the boulevard often becomes a corner or border for traditional and conventional neighborhoods. It is essential that roadway investments go into keeping these facilities strong and healthy. Building boulevards with too many lanes can create new problems, so the general rule is to widen intersections and keep the main portions to only those lanes that are needed. Bike lanes are essential. In some cases medians can be reinforced to permit responder vehicle crossover to avoid strangled signalized intersections.

Boulevards can allow for movement of 20-40,000 vehicles daily, and sometimes more. A good network of boulevards is needed to give higher speed access to distant destinations. Boulevards should not be overbuilt. They need to move cars, trucks, bicycles, pedestrians, and transit vehicles. As with avenues, boulevards require well-designed intersections to keep traffic in motion. Medians add to capacity and safety (often doubling safety of roads with five or more lanes) and make it possible for pedestrians and bicyclists to cross at important points.

7 Parkways

Parkways are lower impact highways

Parkways have the potential to move far more traffic than a boulevard. Parkways have few intersections and carry traffic long distances without interruption. It is possible to move 40-80,000 vehicles per day on a well designed parkway. There are no driveways, and very few left hand turns permitted in a parkway. Parkways can be designed to allow emergency responders to jump the median island at key locations. Motorists are forced to turn right in and right out. Special U-turn pockets can be included to allow vehicles to double back.

Disadvantages to Responders: None.

Parkways assure high speed 40-60 mph travel. Parkways provide access to regional destinations. Access to avenues, lanes, streets, and even some trail connections, can be built into the system.

Comments:

1. Parkways must be designed to permit the responder to jump the median at all access entries.
2. In some cases bollards are used to prevent motorist access. However, the bollards are rarely needed. A sign and low curbing will keep motorists from attempting illegal entries.

Appropriate locations for parkways:

Parkways should only be located in suburban and semi-rural areas. Freeways can be designed with parkway elements. Some locations for future freeway corridors should be designed as parkways to reduce the environmental, social and other impacts associated with freeway design.

Parkways are the powerhouse of movement. Think of a parkway as a wholesome, highly efficient form of a freeway without the land consumption of on and off ramps. Only a few towns have them. New portions of towns and cities have the opportunity of using these efficient movers of vehicles, while accommodating bicyclists and pedestrians along parallel trails. This parkway in Bellevue, Washington (above), has been on the ground for 20 years. It easily moves 41,000 vehicles per day, using 4-lanes and limited traffic signals. Access, even to side streets, is highly restricted. No left turns are permitted into or out of most side streets. Instead, U-turn pockets are provided. Meanwhile, emergency responders are given additional access by crossing over on specially lowered median sections (below).

8 Intersections

Efficient intersections move all modes

Intersections are places to safely orchestrate the conflict between cars, cyclists and pedestrians and to provide for efficient movement of all modes.

Disadvantages to Responders: None.

Well built intersections are needed to keep responders in motion. In some settings, activated signal controls (Opticom style) allow the fastest and most uniform flow of traffic. In others cases, roundabouts are a superior tool, keeping the intersection free of traffic build-up more hours a day than through conventional signal controls. Traffic modeling can be used to determine which tool is likely to perform the best.

Comments:

1. In most settings, signal systems can be refined to allow an emptying of traffic queues while responders are approaching.
2. In some settings, 4-way stop controls are effective. However, as roadway volumes increase, signals or roundabouts perform best.
3. Two-lane roundabouts can be effective at dealing with volumes as high as 50,000 cars per day, keeping traffic queues to a minimum most times of the day.
4. Intersections can be designed to work efficiently by keeping driveways several hundred feet away from the intersection, adding medians with turning pockets, and right turn lanes with pork chop islands (as seen in the lower right corner of the top photo).

Pedestrian friendly intersections are built at a scale to keep traffic in motion. Overly wide intersections complicate safety, access and pedestrian issues. The above intersection at Connecticut and "K" Streets in Washington, D.C. is an excellent example of a top performing intersection that is not overly wide and accomodates pedestrians. Clearwater, Florida collapsed three nonsignalized and three signalized intersections into one roundabout intersection (below). The alteration allows another 20,000 vehicles to move (40,000 to 60,000), plus it also accomodates 6-8,000 pedestrians on special weekend days at the beach.

9 On-Street Parking

On-Street Parking should not get in the way

An important goal of traditional and environmentally sensitive, smart growth neighborhoods is to reduce the number of driveways, off-street parking and other permeable surfaces that lead to water runoff, heat gain and other ill effects. On-street parking is an important resource. However, when we combine more compact development with reduced off-street parking, the increased number of people parking on-street can create an operations problem. There are several ways to maintain open spaces for fire-fighting operations short of restricting parking altogether.

Signs and painted curbs have some effect in preventing illegal and problematic parking. A surer measure is to have the developer build double sets of driveways and crosswalks to create a no-parking zone that is visually obvious and will be enforced by the neighborhood. Similar treatments are created through placement of alleys, tree wells, curb extensions and combinations of other treatments. Where dwelling unit densities are low, parking is not likely to be an issue. In the bottom photo the double driveways located across from a driveway and hydrant create space for emergency operations.

Create "No Parking" Spaces by Design

People find it difficult to park in the following locations: At driveways, marked crosswalks, at mail pick-up stations, alleyways, tee intersections and other places where such illegal parking would not go unnoticed. Although in many locations drivers will obey "no parking" or "no standing" signs and red curbs, design constraints often work best.

Comments:

1. Place a double set of driveways every 200 or 300 feet, or at other distances prescribed by the fire department or fire marshall.
2. Place alleys on short connector blocks across from one another to achieve the same goal.
3. Place mail box clusters, curb extensions or other treatments at locations where residents and guests will find it inappropriate to park.
4. Since police rarely have a chance to notice and correct inappropriate parking behavior, ask neighborhood leaders to take charge of notifying illegal parkers or to alert police of ongoing problems.

Appropriate placement:

Protected open street space is appropriate at regular intervals set by the fire department or fire marshall. Generally, space is needed every 200-300 feet, or at each mid-block hydrant location.

10 Other Techniques

GIS-aided response

Many cities are purchasing improved vehicle computer systems to aid in their response to greatly increased traffic and a need to get diverse equipment to difficult neighborhood locations. In-vehicle display systems can map the best route choice, indicate the locations of all traffic calming measures, identify traffic buildup locations and show the routes of travel of other responders who are on their way and already at the site.

These systems have become commonplace in enforcement. Communities should consider their high rate of return for medical and fire response. With more and more challenges being placed in and around neighhborhoods, these systems can prove to be a highly valuable, if not essential, tool to achieve community goals.

Neighborhood fire stations

Fire administrators and city management must continue to measure the value and importance of new or relocated stations to provide rapid response.

Smaller, appropriate size equipment

Emergency response administrators in historic towns with tight street geometry know the importance of using equipment that gives the fastest response times. Why should it be different in towns with wider streets? Big equipment is often not as desirable as lighter-weight, faster-accelerating equipment.

Unfortunately, the decision on what equipment to purchase and operate is not always simple. Pressures to purchase the largest piece of emergency equipment must be measured against the end goal of getting teams to the emergency in a timely manner.

Many Australian fire departments are critical of U.S. practices. They are purchasing less and less equipment from our country, opting instead to go with Swedish and other equipment that give them improved response and improved insurance and performance ratings. It is likely that, in time, our manufacturers will provide more options. But, until such equipment becomes readily available administrators should look for the equipment best suited to the mission.

Stations in revitalized downtowns, near new traditional neighborhoods and other locations provide faster response times. Efficient response times should be a widely held community value. In some cases, changes in streets, traffic patterns, land uses and other changes will lead to an evaluation of station locations, size of units, better emergency equipment and computer-aided response equipment. More than ever, responders must rely on new technologies. Just as systems are adapting to change, so must our ability to plan and place new types of streets and treatments.

Reference Material and Additional Resources

Resources on Traffic Calming and Emergency Response

The following list of references provides added background on this emerging topic. While we do not agree with all of the claims made in these documents, we believe they are helpful in gaining a better understanding of the issues. In the final analysis, it is essential that this material be balanced with a holistic approach that applies the information in this manual along with other sources to fit local conditions.

Atkins, Crysttal and Wilson, Ed. "Balancing the Tradeoffs: How the City of Portland, Oregon Resolved the Conflict Between Traffic Calming and Emergency Response Services." ITE Annual Meeting Compendium. 1998. Washington, DC. Institute of Transportation Engineers. 1998. www.ite.org/traffic/documents/AHA98A12.pdf. (7 pages)

Brown, P.E., Steven J. and Fitzsimmons, P.E., Steven M. "Calming the Community (Traffic Calming in Downtown Sacramento)." ITE Annual Meeting Compendium, 1997. pp. 652-660. Washington, DC. Institute of Transportation Engineers. 1997. www.ite.org/traffic/documents/AHA97G52.pdf. (9 pages)

Bunte Jr., Leslie W. "Traffic Calming Programs and Emergency Response: A Competition of Two Public Goods." Professional Report presented to the Faculty of the Graduate School of the University of Texas at Austin in partial fulfillment of the requirements for the degree of Master of Public Affairs, May 2000. (259 pages)

Burden, Dan. *Streets and Sidewalks, People and Cars: The Citizens' Guide to Traffic Calming.* Local Government Commission. 2000. (52 pages)

Coleman, P.E., Michael A. "The Influence of Traffic Calming Devices upon Fire Vehicle Travel Times." ITE Annual Meeting Compendium. 1997. pp. 838-845. Washington, DC. Institute of Transportation Engineers. 1997. www.ite.org/traffic/documents/AHA97I38.pdf. (8 pages)

Davis III, P.E., Raymond E. and Lum, P.E., Gordon. "Growing Pains or Growing Calmer? Lessons Learned from a Pilot Traffic Calming Program." ITE International Conference Journal. 1998. Washington, DC. Institute of Transportation Engineers. 1998. www.ite.org/traffic/documents/CCA98A14.pdf. (3 pages)

Dittberner, P.E., Randy A. "Achieving Support for Traffic Mitigation from Elected Officials and Emergency Services." ITE Annual Meeting Compendium. 1998. www.ite.org/traffic/documents/AHA98B65.pdf. (7 pages)

Ewing, Reid H. *Traffic Calming: State of the Practice.* Institute of Transportation Engineers; U.S. Federal Highway Administration. Washington, DC. 1999. www.ite.org/traffic/tcstate.htm. (244 pages)

Ewing, Reid H. "Legal Aspects of Traffic Calming." ITE Annual Meeting Compendium, 1998. Washington, DC. Institute of Transportation Engineers. 1998. www.ite.org/traffic/documents/AHA98B26.pdf. (13 pages)

Maryland Transportation Technology Center. "The Effect of Speed Humps and Traffic Circles on Responding Fire-rescue Apparatus in Montgomery County, Maryland." 301-405-2009.

Noyes, Patricia B. and Fox, P.E., William C. "Neighborhood Traffic Management: Process and Results." ITE International Conference Journal. 1998. Washington, DC. Institute of Transportation Engineers. 1998. www.ite.org/traffic/documents/CCA98A02.pdf. (7 pages)

Railey, Melinda A. "The Impact of Traffic Management Programs on the Delivery of Fire Suppression and Emergency Medical Services." Professional Report presented to the Faculty of the Graduate School of the University of Texas at Austin in partial fulfillment of the requirements for the degree of Master of Science in Community and Regional Planning. 1996. www.ite.org/traffic/documents/tcir0362.htm. (103 pages)

Resources on Traditional Neighborhood Design

Burden, Dan et al. *Street Design Guidelines for Healthy Neighborhoods.* Local Government Commission. 1999.

Calthorpe, Peter. *The Next American Metropolis: Ecology, Community, and the American Dream.* Princeton Architectural Press. 1993.

Duany, Andres; Plater-Zyberk, Elizabeth and Speck, Jeff. *Suburban Nation: The Rise of Sprawl and the Decline of the American Dream.* North Point Press. New York. 2000.

Duany, Andres and Plater-Zyberk, Elizabeth. *Towns and Town-Making Principles.* Rizzoli. New York. 1991.

Katz, Peter. *The New Urbanism: Toward an Architecture of Community.* McGraw Hill. 1993.

Leccese, Michael and McCormick, Kathleen, editors. *Charter of the New Urbanism.* McGraw Hill. 2000.

Additional Resources

For those interested in reading more about street design issues, the following books and documents may be of interest:

A Guidebook for Residential Traffic Management. Washington DOT. 1994.

Anderson, Stanford, Editor. *On Streets.* MIT Press. 1986.

Appleyard, Donald. *Livable Streets.* University of California Press. 1981.

Engwicht, David. *Reclaiming Our Cities and Towns: Better Living With Less Traffic.* New Society Publishers. 1993.

Flexibility in Highway Design. Federal Highway Administration. (FHWA-PD-97-062). 1997.

Jacobs, Allan B. *Great Streets.* Massachusetts Institute of Technology. 1993.

Jacobs, Jane. *The Death and Life of Great American Cities.* Random House, Inc. 1961.

Kobza, Kim Patrick. *There Goes the Neighborhood, Protecting Your Home and Community From Poor Development Choices.* Neighborhood America Press. 1998.

Ramati, Raquel. *How To Save Your Own Street.* Doubleday and Co.,

Residential Streets, Second Edition. American Society of Civil Engineers (ASCE) and Institute of Transportation Engineers (ITE). 1990.

Residential Street Design and Traffic Control. Institute of Transportation Engineers. 1989.

Southworth, Michael and Ben-Joseph, Eran. *Streets and the Shaping of Towns and Cities.* McGraw-Hill. 1997.

"Streets: Old Paradigm, New Investment." Places magazine. Volume 11, No. 2. Summer 1997.

Taking Back Your Streets. Conservation Law Foundation. 1995.

Traffic Engineering Handbook, Fifth Edition. Institute of Transportation Engineers.

Vernez Moudon, Anne. *Public Streets for Public Use.* Columbia University Press. 1991.

Appendix

Speed Reduction Saves Lives

How effective is traffic calming in reducing crashes and crash severity? Extensive work in Europe and America reveals substantial improvement in safety at speeds appropriate to neighborhoods. Most traffic calming and traffic management programs reduce crashes in neighborhoods by 20% to over 90%.

How is this so? As the top graph illustrates, casualty rates grow exponentially as speed increases. There is a high survival rate when pedestrians or bicyclists are hit at speeds of 15-20 mph.

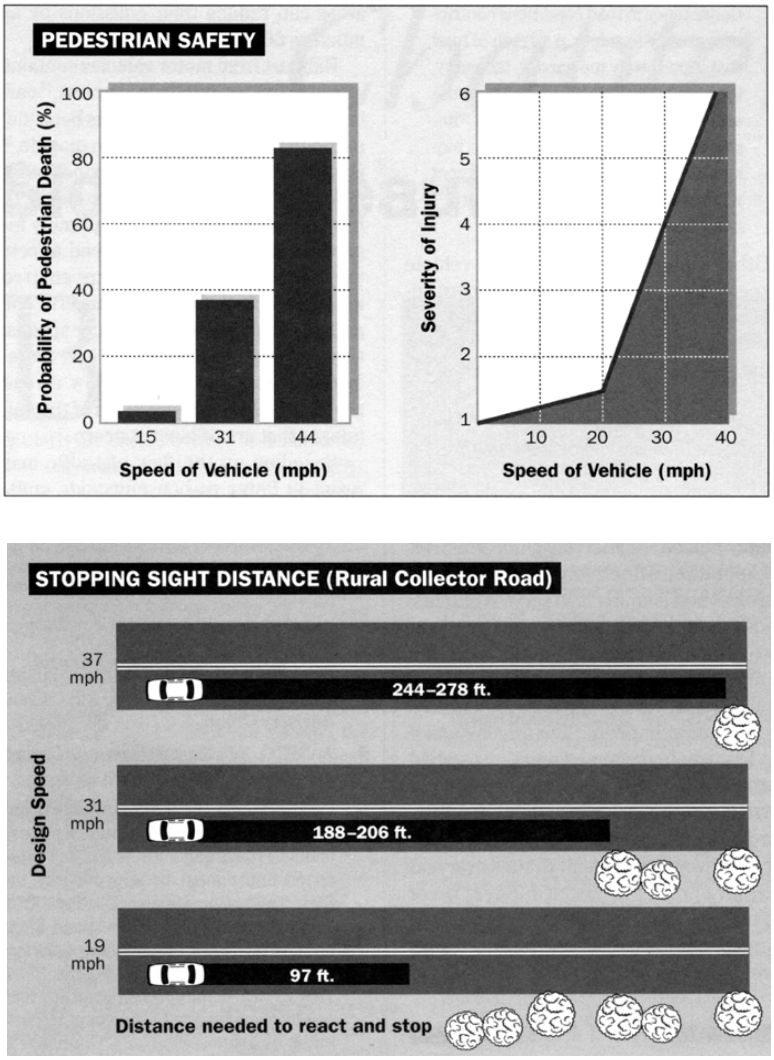
Injuries become quite severe at 30 mph, and catastrophic at speeds of 40 mph and higher. High speeds (above 25 mph) have never been appropriate to a neighborhood. Yet current designs induce higher-end speeds.

Some studies reveal that children, and especially teenagers in suburban neighborhoods, are at greater risk of losing their lives in traffic crashes than their counterparts in inner city locations who often deal with gang-related violence.

The lower graphic illustrates how critical reaction time drops dramatically as speeds increase.

Today the greatest source of danger in modern neighborhoods for people of all ages is not the house fire, but traffic.

Thus, one of the greatest ways the fire, police and other safety partners in a community can address community safety needs is to advocate low-speed, efficient neighborhood streets.



Traffic related deaths and injuries of children is a growing national concern. *The Centers for Disease Control and Prevention and the "Let Kids Live" coalition, have learned that young children are more likely to die as a result of traffic crashes than through all childhood diseases combined. Reduction in traffic deaths and injuries is best handled through an aggressive campaign for seat belt and child restraint compliance, and by reducing vehicle speeds in neighborhoods where children spend much of their time. Only through better designed traditional neighborhoods, and aggressive efforts at traffic calming conventional neighborhoods, will these important community and national goals be achieved.*

Local Government Commission
www.lgc.org

A nonprofit, nonpartisan, membership organization, the Local Government Commission is composed of forward-thinking, locally elected officials, city/county staff, and other interested individuals. The LGC inspires and promotes the leadership of local elected officials to address the problems facing our communities by implementing innovative policies and programs that lead to efficient use of civic, environmental and economic resources.

The LGC has produced additional street design and safety publications, including *Street Design Guidelines for Healthy Neighborhoods; Streets and Sidewalks, People and Cars – The Citizens' Guide to Traffic Calming; Designing Safe Streets and Neighborhoods;* and *Land Use Planning for Safe, Crime-Free Neighborhoods.*

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A Handbook for Planning and Designing Streets

City of Ashland

Department of Community Development

Planning Division

City of Ashland

Street Standards Handbook

Adopted by the Ashland City Council
February 2, 1999

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July 1, 2008

City of Ashland
Department of Community Development
Planning Division
51 Winburn Way
Ashland, OR 97520
541.488.5305

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Catherine Shaw, Mayor
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Steve Armitage, Chair
Alex Amarotico
Russ Chapman
Marilyn Briggs
John Fields
Mike Gardiner
Chris Hearn
Anna Howe
Mike Morris

Produced by the Planning Division of the Department of Community Development
John McLaughlin, Director
Bill Molnar, Senior Planner
Maria Harris, Associate Planner
Mark Knox, Associate Planner
Susan Yates, Executive Secretary

The following City departments, State and local agencies participated in the development of the Street Standards Handbook.

Ashland Fire Department
Keith Woodley, Fire Chief
Don Paul, Assistant Fire Chief

Ashland Police Department
Scott Fleuter, Police Chief
Mike DeCapua, Police Captain

Ashland Public Works
Paula Brown, Director
Jim Olson, Engineering Services Manager

Jackson County Public Works
Eric Niemeyer, Engineer

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Kevin Wallace, Senior Planner

Rogue Valley Transportation District
Scott Chancey, Planner

Oregon Department of Transportation
Mark Ashby, TGM Coordinator
Monte Grove, Area Manager

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Table of Contents

INTRODUCTION

Ashland's streets are some of the most important public spaces in the community. This handbook outlines the art and science of developing healthy, livable streets. It is intended to illustrate current standards for planning and designing the streets of Ashland. The standards are to be used in the development of new streets, and reconstruction of existing streets or portions thereof (i.e. improving a paved local street by adding sidewalks).

The handbook contains standards for street connectivity and design as well as cross sections for a series of street types. Each cross section provides a model for building streets the traditional way. As the term handbook suggests, it is intended as a resource for use by home builders, developers and community members in the pursuit of quality development practices.

A series of street types is offered including the multi-use path, alley, neighborhood street, commercial neighborhood street, neighborhood collector, commercial neighborhood collector, avenue and boulevard. Variations can be made from these basic types to fit the particular site and situation. However, the measurements of each street component must be used to create and maintain the desired low-speed environment where people feel comfortable and the maximum number of people walk, bicycle and use transit.

All streets in Ashland shall be designed using the following assumptions.

- All designs encourage pedestrian and bicycle travel.
- Neighborhood streets (Neighborhood Collectors and Neighborhood Streets) are designed for 20 mile-per-hour (mph).
- All new streets and alleys are paved.
- All streets have standard vertical, non-mountable curbs.
- Gutter widths are included as part of the curb-to-curb street width.
- New avenues and boulevards have bicycle lanes.
- Parkrow and sidewalk widths do not include the curb.
- Sidewalks are shaded by trees for pedestrian comfort.
- All streets have parkrows and sidewalks on both sides. In certain situations where the physical features of the land create severe constraints, or natural features should be preserved, exceptions may be made. Exceptions could result in construction of meandering sidewalks, sidewalks on only one side of the street, or curbside sidewalk segments instead of setback walks. Exceptions should be allowed when physical conditions exist that preclude development of a public street, or components of the street. Such conditions may include, but are not limited to, topography, wetlands, mature trees, creeks, drainages, rock outcroppings, and limited right-of-way when improving streets through a local improvement district (LID).
- Parkrows and medians are usually landscaped.
- Garages are set back from the sidewalk so parked vehicles are clear of sidewalks.
- Building set backs and heights create a sense of enclosure.

The street connectivity and design standards are part of the *Ashland Land Use Ordinance* and are approval standards that will be used in land use decisions and for street construction projects. While much of this handbook is a "user-friendly" version of what is in the *Ashland Land Use Ordinance*, the entire document is a supporting document to the City's *Comprehensive Plan*.

Section I outlines the basic traditional street design principles for planning and designing new and reconstructed streets. Section II specifies the street connectivity standards which must be used in laying out and locating new streets. Section III contains cross sections and describes the design requirements for new and reconstructed streets. Section IV specifies curb return radius standards. Section V outlines additional standards for hillside streets. Finally, Section VI defines standards for driveway apron and curb cut standards.

BACKGROUND

In December 1996, the City of Ashland adopted an updated *Transportation Element* of the *Comprehensive Plan*. Many of the policies of the *Transportation Element* require the City use traditional street design for the planning and design of new and reconstructed streets (Street System Policies 2, 3, 5, 6 on page 33, Pedestrian and Bicycle Goal 1, Policies 2, 6, 7, 9, 10, 11, 12, 13 on page 50). Subsequently, the City of Ashland updated the street design standards, as part of the *Transportation System Plan* and *Local Street Plan*, to reflect traditional street design principles and implement the goals and policies of the *Transportation Element* of the *Comprehensive Plan*.

SECTION I: BASIC PRINCIPLES OF TRADITIONAL STREET DESIGN

Traditional neighborhood design is used as the basis for the City of Ashland street layout, design and connectivity standards. This planning and design concept is used because it creates streets that provide multiple transportation options, focuses on a safe environment for all users, treats streets as public spaces and enhances the livability of the neighborhoods.

Traditional or "neo-traditional" neighborhood design is a planning and design concept that revisits many of the features of urban neighborhoods developed prior to World War II. Neighborhoods were designed to be easily used by pedestrians, bicyclists and transit riders. Several areas including the Railroad District, the Downtown, the Briscoe School neighborhood and the Gresham-Sherman Street neighborhood are examples of traditional neighborhood design.

The single most distinguishing feature of traditional neighborhood design is the continuous fabric of intimately blended land uses, arranged so that travel between them can be made by walking, bicycling, and transit in addition to the privately-operated auto. Streets are small, and connected into grid networks which provide multiple available routes for a given trip.

The following definition of a traditional neighborhood is based on the work of Elizabeth Plater-Zyberk, Andres Duany and Randall Arendt. Although streets are just one element of neighborhoods, the description of a traditional neighborhood is given for the purpose of placing traditional street design in the proper context.

- The traditional neighborhood has a center and an edge. Development is compact in the center and density decreases as one moves towards the edge.
- The center includes a public space, such as a square, a green, or an important street intersection. The center is the focus of the neighborhood's public buildings.
- It is compact, usually one-quarter of a mile from the center to the edge.
- It gives priority to public space. Streets are designed to be part of the public realm. Civic buildings are located in prominent locations. Open space is provided in the form of squares, parks and plazas.
- Neighborhood architecture is of human scale and proportions. Buildings are close to the street.
- It includes a mix of activities such as residences, shops, schools, workplaces and parks. Commercial activities meet everyday needs such as grocery, newsagent, drugstore, hardware, etc.
- The area is walkable and pedestrian friendly, but also auto-accessible. Routine activities such as schools, shops and playgrounds are within walking distance.

- There are a variety of housing types - single-family homes, town homes, apartments, etc.

- It consists of interconnected network of small streets and blocks, generally laid out in a grid or modified grid pattern. Block lengths are under 600 feet. Streets have sidewalks and large parkrows with street trees.

- Streets are scaled for typical uses rather than being oversized to accommodate worst-case scenarios.

- There are opportunities for casual socializing at gathering places such as cafes, neighborhood parks, soda fountains and taverns. These gathering places provide people locations other than one's home or workplace where informal public life may be experienced.

Narrower streets are one of the primary characteristics of traditional neighborhood design. Narrower streets have several benefits. Currently, it is not uncommon for 25 percent or more of a proposed development's land area to be set aside for required rights-of-way. Using narrower streets can reduce this percentage and free up the land for open space, or more intense development. Narrower streets reduce street development costs. Narrower streets have been found to slow down traffic and reduce accident potential. Narrower street also have a more intimate feel, and contribute to neighborhood livability.

Traditional neighborhood design streets and networks achieve a balance between the different modes of transportation that is lacking in conventional suburban development. Furthermore, the street is treated as a public space and is considered a key element of the neighborhood. The following list of "pros" of traditional neighborhood design streets is based on the work of Walter Kulash, P.E., a nationally recognized traffic engineer specializing in livable traffic design and traffic calming.

- A network of small interconnected streets has more traffic capacity than the same street area arranged in a sparse hierarchy of large streets. According to Kulash, this is because intersections control the capacity of any network, and there are more intersections to disperse the turning movements.

- In the traditional neighborhood street network, the traveler can choose from many routes available on the basis of what they see out on the street. People can take alternative routes in the full confidence that the network is complete. The multiplicity of routes available also lets the walker/cyclist match the route to their particular skills. For example, expert cyclists can choose to take their place in traffic as a fully-vested vehicle, while low-skill cyclists can travel on small, possibly more circuitous routes.

- The geometry of a dense network of small streets provides shorter travel distance between any two points. Overall, even though trip lengths are shorter, travel time is comparable to conventional suburban development. This is because travel speeds are lower in traditional neighborhoods. Shorter trip lengths encourage walking and

bicycling. In traditional neighborhoods a dense network of small streets is combined with a mix of land uses places a large number of origins and destinations within walking or bicycling distance.

- Motor vehicle travel speeds are lower on traditional neighborhood streets which directly affects overall safety, the non-automotive traveling environment and the livability of neighborhoods. See Section Designing for *20mph in Section III: Design Standards*. The conventional suburban development automobile trip, made mainly on arterial streets is typified by a pattern of high speeds for short segments of road, interspersed with long traffic signal delays. In contrast, the traditional neighborhood automobile trip with its greater use of collector and local streets is characterized by low maximum speed, more frequent short delays at intersections and a greater number of turning.

- The overall trip quality for people using all of the different modes of transportation is superior in a traditional neighborhood street network. What we have long felt intuitively, but are only starting to appreciate, is that our perception of travel is not one-dimensional at all, but rather considers a host of factors along with the "hard" measures of time and speed. There is a degree of goodness or badness felt by the traveler, and though difficult to quantify, we know it directly affects how people travel and human behavior while traveling.

- A series of small streets yields a better bicycle and pedestrian environment than a hierarchy of a few larger streets. Specific problems with larger arterials are large-radius corners, shallow-angle crossing as ramps and turn-lanes, monstrous pavement expanses to be crossed, dual left turn-lanes, long traffic signals, short walk signals and generally competitive and aggressive driving. Kulash describes the general feeling walkers and bicyclists experience on high-speed, large arterials as "being in an alien moonscape."

- The traditional neighborhood provides a depth of texture and richness of detail along the street that is interesting to one traveling at the pedestrian speed.

It is important to note that traditional neighborhood design, as used in current times and in this handbook, does not exclude or prohibit automobiles. Rather, it accommodates driving just as it provides for other forms of transportation. The purpose of the street design standards in this handbook is to create streets which afford people the equal opportunity to walk, bicycle, use the bus or drive. Traditional neighborhood design is used because this approach creates streets which are able to obtain the balance between providing transportation options and maintaining livability in adjacent streets and neighborhoods.

Required Street Layout and Design Principles

The following basic principles shall be used for the planning and designing of new streets.

1. Neighborhood Form and Character

Streets are important elements of the form and character of neighborhoods. Street layout and design are an integral part of neighborhood design.

2. Neighborhood Identity

Neighborhood identity is largely influenced by the streets in the area.

3. Emergency Vehicles

Streets should be designed to efficiently and safely accommodate emergency fire and medical services vehicles. The effects of decisions concerning turning radii and paths must be made with a full understanding of the implications of such decisions on the other users of the street.

4. Specificity

Each street should be designed individually and molded to the particular situation at hand by a multi-disciplinary team. Planners, engineers, architects, emergency responders, utility providers, landscape architects as well as the developer and neighborhood or homeowners association groups should be included in street design teams.

The following conditions (existing and projected) must be considered in order to design each street.

- the volume of pedestrian, bicycle and motor vehicle traffic each day and at peak hours;
- the speeds of motor vehicles, bicycles and pedestrians along the street as designed or redesigned;
- the mix of pedestrian, bicycle and motor vehicle traffic (including percentage of large trucks);
- the zoning and surrounding future land uses (assess pedestrian, bicycle and transit generators and attractors such as schools, shopping areas, community buildings, parks, churches and gathering places);
- the natural features of the area such as slope, mature trees, creeks, wetlands, etc.;
- the adjacent building setbacks with respect to the street;
- whether adjacent properties will be serviced directly from the street, or from alleys; and
- the function of the street and relation to the surrounding street network.

5. Shared Street Space

On neighborhood streets with relatively low average daily traffic (ADT), the curb to curb area on neighborhood streets shall be used as a shared space by moving automobiles, parked cars and bicycles.

Discussion: A principle central to the design and sizing of neighborhood level streets in traditional street design is the use of shared street space where ADT is relatively low. Rather than having separate lanes of traffic or parking, the curb-to-curb area is narrow and drivers may be required to slow down or pull over to let an oncoming vehicle pass before proceeding. On neighborhood streets serving 25 dwelling units or less, research has shown that the chances of meeting another car where two cars are parked opposite each other will occur only about once a month for an average driver.

6. Human Scale

Streets should be designed at the human scale. Human scale is the relationship between the dimensions of the human body and the proportion of the spaces which people use. Those areas that provide visually interesting details, create opportunities for interactions and feel comfortable to pedestrians moving at slow travel speed are designed at a "human scale."

Discussion: The scale of a street design is of paramount importance. The design scale of a traditional street is that of the pedestrian, sometimes referred to as "human scale." Describing what is of a "human scale" is perhaps best described by noting that which is not. A highway billboard beside a 55mph highway is a good example of vehicular scale. In order to be noticed, the sign must be very large with lettering large enough to be noticed and read by a motorist passing by at 81 feet per second (55mph). In contrast, a pedestrian typically walks at 3.5 to 4 feet per second. Moving at a much slower pace enables pedestrians to take in much smaller signs and lettering.

8. Streetscape

Street design should consider the entire area from building face to building face, or the "streetscape." The streetscape begins at the front of a vertical element, such as a building or fence on one side of a street and runs to the front of a building on the other side of the street. It is a three dimensional area running the length of the street.

Discussion: The level of integration of land use and transportation is readily apparent by viewing the streetscape. The designer must consider the scale of the buildings, the form of development expected to occur and the expected level of motor vehicle, pedestrian and bicycle volumes when designing or redesigning a particular street. In addition, the function and ambience of the street must be considered and the needs of vehicular and nonvehicular users addressed.

9. Connectivity

Streets should be interconnected. See *Section II: Connectivity Standards*.

Discussion: Traditional neighborhood streets are interconnected.

Cul-de-sacs and other dead-end streets are not typical of traditional neighborhood design except in areas where topographic, wetland and other physical features preclude connection. Where extreme conditions preclude a street connection, a continuous nonautomotive connection in the form of a multi-use path or trail shall be provided.

10. Multiple Routes

Streets shall be laid out using a grid or modified grid network pattern to provide multiple routes. See *Section II: Connectivity Standards*.

11. Pedestrians, Bicyclists and Public Transportation Users

Pedestrians, bicyclists and bus riders are considered primary users of all streets. Streets should be designed to meet the needs of pedestrians and bicyclists, thus encouraging walking, bicycling and riding the bus as transportation modes. Pedestrian, bicycle and public transportation considerations should be integrated from the beginning of the design process.

12. Driveway Aprons and Curb Cuts

The number of driveway aprons and curb cuts along streets should be minimized to enhance the pedestrian environment and maintain vehicular, pedestrian and bicycle capacity. See *Section VI for Driveway Apron and Curb Cuts*.

13. Access to Activity Centers

Neighborhood streets should provide convenient access to and from activity centers such as schools, commercial areas, parks, employment centers, and other major attractors.

14. Vista Terminations

Street design should always consider important sites at the end of streets and should seek to learn what civic buildings, or public spaces may be needed for a particular area. The focus of vista terminations may include buildings, plazas, parks, or a notable view. New subdivision design should provide consideration for vista termination in street layout.

15. Pavement Area

The pavement area of neighborhood streets should be minimized, consistent with efforts to reduce street construction and maintenance costs, storm water runoff, and negative environmental impacts. Narrower streets also distinguish neighborhood streets from boulevards and avenues, and enhance neighborhood character.

16. Peak Run-Off

Where appropriate, the local street system and its infrastructure should reduce peak storm water run-off into the City's storm drain system and natural water systems downstream, and provide biological and mechanical treatment of storm water runoff whenever possible.

17. Preservation of Natural Features

Neighborhood street design should be responsive to physical features, and should avoid or minimize impacts to natural features and water-related resources. Street layout standards should allow street alignments to follow natural contours and preserve natural features. See *Standard 5 in Section II: Connectivity Standards*.

18. Neighborhood Street Volumes

Neighborhood streets should be designed to carry traffic volumes at low speeds. They should function safely while reducing the need for extensive traffic regulations, control devices and enforcement.

19. Cut-Through Traffic

The neighborhood street should be designed to reduce continuous cut-through, non-local traffic on neighborhood streets.

20. Street Trees

Street trees should be planted on neighborhood streets to create attractive and healthy neighborhood environments, and to enhance the image of a street as a place with which residents can identify. Trees planted in the parkrow, along the sidewalk, or anywhere in the public right-of-way must be from the City of Ashland *"Recommended Street Trees: A Guide to Selection, Planting and Maintenance."*

Discussion: Trees and landscaping form an essential element of the traditional neighborhood streets. The relationship of vertical height to horizontal width of the street is an important part of creating an inviting public space or "outdoor room." Large stature trees form an especially important part in creating the outdoor room when buildings are setback from the street and are relatively low in height (i.e. single-family residential neighborhoods). For further discussion, see *Elements of the Street in Section III: Design Standards*.

21. Street Lights and Furniture

Light poles should be pedestrian scale and styles of poles should match the neighborhood. Spacing of light poles should be determined by the adjacent land uses. Lighting should be placed at frequent intervals in busy retail and commercial areas, but may be limited to intersections in residential areas. In some instances, building or fence-mounted lighting may replace the need for additional street lighting. Lighting elements should provide full-spectrum light so that colors at night are realistic.

Street furniture includes pedestrian amenities such as benches, flower pots, sculptures and other public art, low walls for sitting and drinking fountains. Benches should be provided in retail and commercial areas, along frequently used pedestrian corridors (routes over one-quarter of a mile to schools, parks, shopping, etc.) and at all bus stops. Trash receptacles should be provided in all pedestrian sitting areas.

22. Curbs

Curbs should be a standard, vertical 6" high curb on all improved streets. Rolled or mountable curbs should not be used because they do not create an effective safety barrier, channel storm water, or prevent automobiles from parking on the parkrow and sidewalk. The horizontal curb surface is not included in the parkrow, or sidewalk width.

23. Transit Routes and Stops

Streets identified as future transit routes should be designed to safely and efficiently accommodate transit vehicles, thus encouraging the use of public transit as a transportation mode. Transit stops should include amenities, such as but not limited to a bench, shelter from the elements, a posted schedule, bicycle parking, and water fountains. Such amenities encourage combination trips such as walking or bicycling to the bus stop and vice-versa at the destination.

SECTION II: CONNECTIVITY STANDARDS

In traditional neighborhood areas, the street networks are laid out in a grid network. The grid or modified grid network provides interconnected streets and multiple travel route options for pedestrians, bicyclists and drivers. The grid network has several benefits. Grid-patterned streets provide many connections and route options for short trips. Many connections and route options disperses traffic and increases safety. The grid pattern uses land efficiently and allows a greater number of lots on a site. Cul-de-sacs and other dead-end streets are not typical of traditional neighborhood design except in areas where extreme topographic or wetland conditions preclude connection (See *Section V: Hillside Streets and Natural Areas*).

Street Connectivity Approval Standards

New and reconstructed streets shall conform to the following connectivity standards, and the City of Ashland Street Dedication Map.

1. Interconnection

Streets shall be interconnected to reduce travel distance, promote the use of alternative modes, provide for efficient provision of utilities and emergency services and provide multiple travel routes. In certain situations where the physical features of the land create severe constraints, or natural features should be preserved, exceptions may be made. Such conditions may include, but are not limited to, topography, wetlands, mature trees, creeks, drainages, and rock outcroppings (See *Section V: Hillside Streets and Natural Areas*).

2. Efficient Land Use

Street layout shall permit and encourage efficient lot layout and attainment of planned densities.

3. Integration With Major Streets

Neighborhood circulation systems and land development patterns shall effectively integrate with boulevards and avenues, which are designed to accommodate heavier traffic volumes.

4. Alleys

The use of the alley is recommended, where possible. The alley can contribute positively to the form of the street and has many advantages. First, it allows the most positive streetscape because it eliminates the need for driveways and the visual intrusion of garages. Secondly, the alley can create a positive neighborhood space where the sidewalk feels more safe and inviting for pedestrians, neighbors socializing and children playing. Third, when the garage is located in rear yards off the alley, interesting opportunities arise for creating inviting exterior rooms using the garage as a privacy wall and divider of space. Finally, the alley enhances the grid street network and provides midblock connections for nonmotorists.

5. Preserving Natural Features

Streets shall be located in a manner which preserves natural features to the greatest extent feasible.

1. Whenever possible, street alignments shall follow natural contours and features so that visual and physical access to the natural feature is possible.

2. Streets shall be situated between natural features, such as creeks, mature trees, drainages, open spaces and individual parcels in order to appropriately incorporate such significant neighborhood features.

6. Walkable Neighborhoods

Neighborhoods shall be sized in walkable increments, with block lengths as defined in *Standard II. 8. Block Length*.

7. Off-Street Connections

Off-street pathways shall be connected to the street network and used to provide pedestrian and bicycle access in situations where a street is not feasible. In cases where a street is feasible, off-street pathways shall not be permitted in lieu of a traditional streets with sidewalks. However, off-street pathways are permitted in addition to traditional streets with sidewalks in any situation.

8. Block Length

A. The layout of streets shall not create excessive travel lengths. Block lengths shall be a maximum of 300 to 400 feet and block perimeters shall be a maximum of 1,200 to 1,600 feet.

Block length is defined as the distance along a street between the centerline of two intersecting through streets. Block perimeter is defined as the sum of the block lengths of all sides of a block.

B. An exception to the block length standard may be permitted when one or more of the following conditions exist.

1. Physical conditions that preclude development of a public street. In certain situations where the physical features of the land create severe constraints, or natural features should be preserved, exceptions may be made. Such conditions may include, but are not limited to, topography, wetlands, mature trees, creeks, drainages, and rock outcroppings (See *Section V: Hillside Streets and Natural Areas*).

2. Buildings or other existing development on adjacent lands, including previously subdivided but vacant lots or parcels, which preclude a connection now or in the future considering the potential for redevelopment.

3. Where an existing public street or streets terminating at the boundary of the development site have a block length exceeding 600 feet, or are situated such that the extension of the street(s) into the development site would create a block length exceeding 600 feet. In such cases, the block length shall be as close to 600 feet as practical.

C. When block lengths exceed 400 feet, the following measures shall be used to provide many connections and route options for short trips.

1. Where extreme conditions preclude street connections, continuous nonautomotive connection shall be provided with a multi-use path. In no cases shall off-street pathways be used in lieu of a traditional street with sidewalks in cases where extreme conditions do not exist.

2. Introduce a pocket park, or plaza area with the street diverted around it.

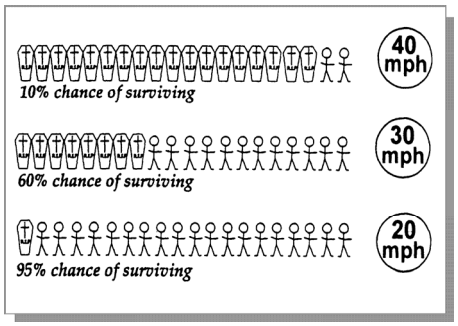
3. At the mid-block point, create a short median with trees or use other traffic calming devices to slow traffic, break up street lengths and provide pedestrian refuge.

SECTION III: DESIGN STANDARDS

Safety

In any design situation, no topic is more important than human safety. Street design situations require the consideration of many, sometimes competing elements to make the street safe for all modes of travel. In street design, the standards that should be applied and questions that should be asked include the following.

- What actions may reasonably be expected of motorists and nonmotorists along the street?
- Given a foreseeable but infrequent problem, what are the ramifications on other users of the street if the problem is specially addressed in the design?
- When balancing conflicting matters, the frequency of conflict between the two or more competing elements and the resulting frequency of difficulties that will be experienced should be documented.
- What are the physical consequences of a particular design element or decision?
- If in doubt, favor the nonmotorist and accommodate the motorist.



Chances of a Pedestrian Surviving a Traffic Accident

Designing for 20mph

High-speed roads have a place between cities, but not through the heart of the community. Relatively low actual travel speeds, a maximum of 20 mph, for motor vehicles is a critical concept in traditional street design. Low motor vehicle travel speeds positively affect safety, the non-automotive travel environment and the livability of neighborhood.

As motor vehicle speed increases, the perception and comfort of pedestrians and bicyclists is negatively impacted and the number of motor vehicle/pedestrian accidents increases. In general, streets with motor vehicles traveling at high speeds are unwelcoming to pedestrians and bicyclists because the impact of motor vehicles kinetic energy and loud sound.

Neighborhood streets (neighborhood streets, neighborhood collectors and some avenues) should be designed for motor vehicle travel speeds of 20 mph or less. When a question exists concerning a particular design detail, the conflict should be resolved in favor of the nonvehicular users, unless the public safety will truly be jeopardized by the decision. Favoring the nonmotorist will usually result in the correct decision because motorists have the benefit of traveling in a device designed to enclose, protect and support the human(s) inside. An inconvenienced motor vehicle will seldom result in a modal shift, but an inconvenienced nonmotorist will often become a motorist resulting in a modal shift.

A survey by the Federal Highway Administration found that by a wide margin, residents find traffic moving at 20 mph through their neighborhoods acceptable; by an equally side margin they find traffic at 30 mph unacceptable. At 20 mph, drivers can anticipate conflicts and have time to

stop for pedestrian at crosswalks. Pedestrian-vehicle accidents are less frequent and, when they occur, much less severe.

Traditional neighborhood streets are designed to create an environment where drivers will realize that driving fast and aggressively is inappropriate. In other words, neighborhood streets are designed so the speed limits are self-enforcing. Narrow streets with street trees in parkrows between the curb and sidewalk and on-street parking calm traffic. In some cases, further traffic calming treatments such as curb extensions at sidewalks, textured, raised crosswalks, medians, and other tools are needed.

Research has shown operating speeds decline somewhat as individual lanes and street sections are narrowed. Conversely, studies by the Institute of Transportation Engineers has shown posted speed limits are regularly exceeded if streets have "gun barrel" designs, or even gentle curves with wide cross-sections. Speed zones, "go slow" signs and lane restriping cannot compensate for the effect on drivers of the physical environment of streets designed to make driving comfortable at travel speeds above 20 mph.

Elements of the Street

Street design involves the creation of some of the most important and frequently used public spaces. In addition to the very important function of providing a travel corridor, streets provide critical public spaces which shape the character of Ashland's neighborhoods. Because streets serve a variety of users, street design must address the divergent needs of pedestrians, bicyclists, transit, motor vehicles, adjacent land uses and neighborhood character.

There are, generally speaking, a dozen or so elements that make up a street. However, the design and assembly of those elements and the determination of the sizes and locations are individual to each street and of lasting importance.

Street, public right-of-way and street right-of-way are used interchangeably throughout this document. The term street refers to more than the paved, curb-to-curb roadway surface. It includes the sidewalk, parkrow, street trees, lighting and street furniture, bike lanes, on-street parking lanes and motor vehicle travel lanes. Right-of-way measurements include the area needed to locate all of the street ingredients. A description of the elements that comprise a street follows.

Motor Vehicle Travel Lanes

The width of a particular street seems to be a simple topic, but this is actually a complicated subject that requires considerable thought and attention. Auto-oriented development focuses on motor vehicles traveling safely and efficiently. This translates into designing streets so that motor vehicles are interrupted as little as possible so that continuous speeds can be maintained. To design for the continuous opportunities for free-flowing vehicles creates situations where passenger cars, the predominant vehicle most of the time, will travel at speeds greater than are desirable for pedestrians and bicyclists.

Streets in Ashland must be designed to a different end so that the overall function, comfort, safety and aesthetics of a street are designed for all users and are more important than vehicular efficiency.

Travel lanes of 8 to 10 feet in width are adequate for all types of vehicles that enter a neighborhood. An average car ranges from 5.5 to 6.5 feet in width. Fire trucks, large buses, RV's and semi-trucks measure 9 feet from mirror to mirror.

Curbs

Typically, standard vertical curbs are used on all traditional neighborhood streets. The standard vertical curb serves a number of purposes. Curbs:

- act as a safety barrier for pedestrians;
- channel storm water into the storm drainage system;
- prevent automobiles from parking in parkrows or on sidewalks;
- keep the edges of the pavement from breaking down; and
- facilitate street sweeping.

Bicycles

A separate, striped bicycle lane is required on both sides of new boulevards and avenues because travel speeds and volumes are high. Typically, the travel speeds and motor vehicle traffic volumes associated with neighborhood streets do not necessitate a separate, striped bicycle lane. The *Oregon Bicycle and Pedestrian Plan* recommends bike lanes when projected Average Daily Traffic (ADT) exceeds 3,000 trips per day, and/or actual travel speeds exceed 25mph.

Parking

Most neighborhood streets allow on-street parking. Parallel parking is the recommended method for on-street parking, but other on-street parking methods, including diagonal and head-in, may be appropriate under certain circumstances. Diagonal and head-in parking must be carefully evaluated before implementing because it requires and additional 11 feet of street width.

Parkrow and Street Trees

Parkrows with street trees are a basic design feature of traditional neighborhoods. Street trees are the trees planted in the parkrow or anywhere else in the public right-of-way. The parkrow is the planting area between the curb and sidewalk. The parkrow is for the most part landscaped in residential areas. In commercial areas, the street trees should be planted in tree wells and the remaining parkrow should be paved to match the sidewalk.

Nothing humanizes a street more than a row of trees shading the sidewalk. Street trees provide a buffer to pedestrians and adjacent land uses from the vehicles on the street. Street trees help calm motor vehicle traffic speeds. Street trees can enhance street image and are an important part of neighborhood character. Large trees provide leafy canopies and welcome shade, buffer pedestrians, screen parked cars and traffic, break visual continuity, soften the character of the street and enhance property values. Economic benefits are reflected in the increased values of properties on streets with well-established trees.

Trees are perhaps one of the very few elements of a street, along with well-designed buildings, that can be large and yet still effectively be of human scale. In addition to their naturalization of the street, trees can serve to create a frame around a street and are recognized as being very conducive to enhancing the nonmotorist environment. In most situations, street trees should line the street and be located in the parkrow.

Large-scale, high canopy trees are preferred over smaller-scale trees for street tree use, whenever they can be used. Among the reasons for this are:

- Use of larger trees with high canopies allows fewer trees to be used to achieve a reasonable amount of shading.

- Large trees provide a canopy over the paved are of the street reducing the air temperature near the ground. Depending on the species of tree planted, research has shown that the temperature difference can range between 5 to 8 degrees Fahrenheit.

- Large-scale trees are more effective in removing pollutants form the air because they provide more leaf surface per tree than small trees. A single, large, free-standing tree with a height of 75feet and a crown width of 45feet will absorb the carbon dioxide output of 800 homes in a year's time.

- When large trees with high canopies are planted along streets serving commercial uses, conflicts with store signs are minimized because the tree canopy is above the sign.

Large-scale trees require an adequate planting area. For this reason, parkrows must be at least 6 feet wide. Smaller parkrows may be permitted to respond to the characteristics of individual developments or street reconstruction projects such as insufficient public right-of-way, steep slopes or other physical conditions. However, the street trees must be planted properly and carefully chosen to ensure healthy growth and root control. The placement, types of trees and planting methods are addressed in the *Street Tree Standards* of the *Site Design and Use Standards* of the *Ashland Land Use Ordinance*.

Trees require maintenance and funding to support watering, pruning, disease, pest control and other items of standard tree care. They can cause varying amounts of leaf litter. The maintenance and care of the parkrow and street trees is the responsibility of the property owner abutting the parkrow (*Ashland Municipal Code 9.08.130*). The placement, types of trees and planting methods are addressed in the *Street Tree Standards* of the *Site Design and Use Standards* of the *Ashland Land Use Ordinance*.

Sidewalks and Crosswalks

An interlinked network of sidewalks is a basic design feature of traditional neighborhoods. Sidewalks must be continuous. The walking experience must be pleasurable if people are to choose walking as a mode of transportation. Continuity, texture and richness of detail is essential to absorbing the pedestrians attention for large amounts of time at a slow speed. Interesting pavement, architectural details, placement of street trees, the width of the parkrow,

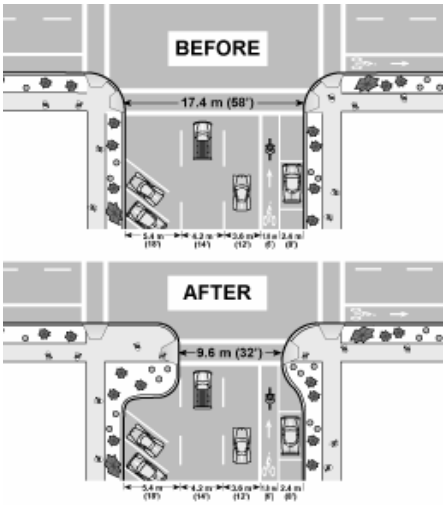
the treatment of building facades, and other visual details enhance the walking experience. In contrast, this continuity can be destroyed by treeless expanses of sidewalks, open edged parking lots and blank walls.

In addition to sidewalks, pedestrian networks can be formed with walkway connections to existing development and across wetlands and slopes that may not be crossed by streets without difficulty. In the center of neighborhoods, pedestrian networks may also be formed by additional walks between buildings, but not at the expense of maintaining the continuity of the pedestrian network adjacent to the streets.

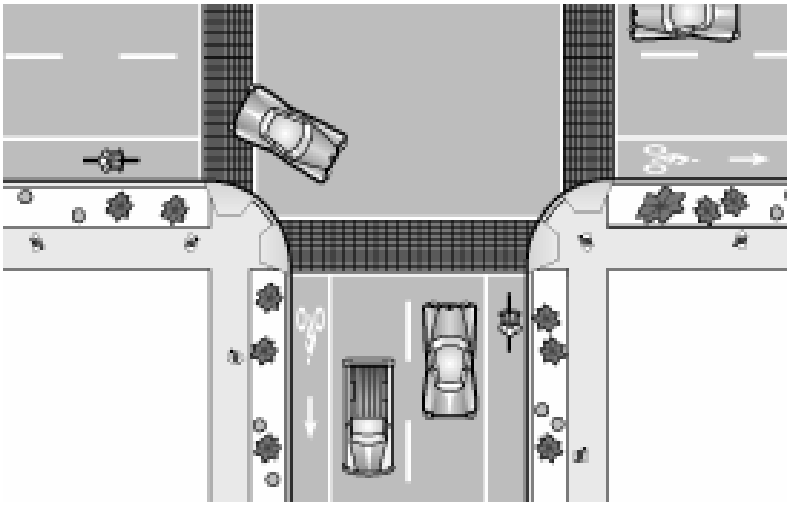
The treatment of intersections is especially important in determining if street crossings are convenient for pedestrians. The continuity of the sidewalks should continue across the street and be defined by a change of texture in the street. A pavement change indicates that at this point drivers must yield the road to pedestrians. Handicap access ramps should be located behind the corner and at the narrowest part of the street.

Pedestrians must be provided with the shortest possible route across street intersections. This is accomplished by using small curb radii and curb extensions. As corner radius increases, the pedestrian crossing distance increases. Sight triangles should be free of street trees so that pedestrians and drivers can see each other.

Curb Extensions Reduce Crossing Distance



Colored and Textured Crosswalk



Application of Standards

On streets classified as boulevards and avenues, which have high volumes, higher travel speeds and a larger percentage of large vehicles, the street function and average daily traffic (ADT) will necessitate adherence to the street standards outlined below. At the neighborhood collector and neighborhood street level, design must follow the standards, but be flexible enough to accommodate varying situations.

One of the basic aspects of traditional street design is that the design must be very specific for the particular street at hand. When determining how to classify a new street for the purpose of design, careful attention should be given to considering the street as a whole in the context of the neighborhood, of the underlying zoning and land uses, and the future amount of traffic, rather than strict adherence to using projected average daily traffic (ADT) figures alone. Care must be taken not to focus on efficiency and worst case scenarios. The end goal should be to balance creating a notable, livable, functional street for the neighborhood, and providing a variety of transportation options for residents.

Table 1: City of Ashland Street Design Standards

TYPE OF STREET	ADT	R.O.W. WIDTH	CURB-TO-CURB PAVEMENT WIDTH	WITHIN CURB-TO-CURB AREA				CURB	PARK-ROW	SIDE-WALKS
				MOTOR VEHICLE TRAVEL LANES	MEDIAN AND/OR CENTER TURN LANE	BIKE LANES on both sides	PARK-ING	on both sides	on both sides	on both sides
2-Lane Boulevard	8,000 to	61'-87'	34'	11'	none	2 at 6' each	in 8' bays	6"	5'-8' [1]	6'-10' [2]
3-Lane Boulevard	30,000	73'-99'	46'	11'	12'	2 at 6' each	in 8' bays	6"	5'-8' [1]	6'-10' [2]
5-Lane Boulevard	ADT	95'-121'	68'	11'	12'	2 at 6' each	in 8' bays	6"	5'-8' [1]	6'-10' [2]
2-Lane Avenue	3,000 to	59'-86'	32'-33'	10'-10.5'	none	2 at 6' each	in 8' bays	6"	5'-8' [1]	6'-10' [2]
3-Lane Avenue	10,000 ADT	70.5'-97.5'	43.5'-44.5'	10'-10.5'	11.5'	2 at 6' each	in 8' bays	6"	5'-8' [1]	6'-10' [2]
Neighborhood Collector, Residential	1,500 to				NA	NA [3]				
No Parking	5,000	49'-51'	22'	11'			none	6"	8'	5'-6'
Parking One Side	ADT	50'-56'	25'-27'	9'-10'			one 7' lane	6"	7'-8'	5'-6'
Parking Both Sides		57'-63'	32'-34'	9'-10'			two 7' lanes	6"	7'-8'	5'-6'
Neighborhood Collector, Commercial										
Parallel Parking One Side		55'-65'	28'	10'			one 8' lane	6"	5'-8' [1]	6'-10' [2]
Parallel Parking Both Sides		63'-73'	36'	10'			two 8' lanes	6"	5'-8' [1]	6'-10' [2]
Diagonal Parking One Side		65'-74'	37'	10'			one 17' lane	6"	5'-8' [1]	6'-10' [2]
Diagonal Parking Both Sides		81'-91'	54'	10'			two 17' lanes	6"	5'-8' [1]	6'-10' [2]
Neighborhood Street, Residential	less than				NA	NA [3]				
Parking One Side	1,500	47'-51'	22'	15' Queuing			one 7' lane	6"	7'-8'	5'-6'
Parking Both Sides	ADT	50'-57'	25'-28'	11'-14' Queuing			two 7' lanes	6"	7'-8'	5'-6'
Alley	NA	16'	12' paved width, 2' strips on both sides	NA	NA	NA	none	none	none	none
Multi-Use Path	NA	10'-18'	6'-10' paved width, 2'-4' strips on both sides	NA	NA	NA	none	none	none	none

[1] 7' – 8' landscape parkrow shall be installed in residential areas, a 5' hardscape parkrow with tree wells shall be installed in commercial areas.

[2] 6' sidewalk shall be installed in residential areas, 8'-10' sidewalk shall be installed in commercial areas. A 10' sidewalk shall be required on Boulevards (arterial) streets in the Downtown Design Standards Zone.

[3] Bike lanes are generally not needed on low volume (less than 3,000 ADT) and/or low travel speed (Less than 25mph) streets

[4] All dimensions and ranges in the City of Ashland Street Design Standards represent minimum standards or ranges for the improvements shown. The approval authority may require a dimension within a specific range based upon intensity of land use, existing and projected traffic and pedestrian volumes or when supported through other applicable standards. The approval authority may approve dimensions and ranges greater than those shown when volunteered by the applicant.

Street Design Standards

A description of street design standards for each street classification follows. For an abbreviated presentation of the street right-of-way standards, see Table 1. All elements listed are required unless specifically noted. All dimensions and ranges in the City of Ashland Street Design Standards represent minimum standard or ranges for the improvements shown. The approval authority may require a dimension within a specified range based upon intensity of land use, existing and projected traffic and pedestrian volumes or when supported through other applicable approval standards. The approval authority may approve dimensions and ranges greater than those shown when volunteered by the applicant.

Approval Standards: New and reconstructed streets shall conform to the following design standards.

Boulevard

Boulevards are major thoroughfares filled with both human and vehicular activity. Design should provide an environment where walking, bicycling, using transit and driving are equally convenient and should facilitate the boulevard's use as a public space. Design should start with the assumption that the busy nature of a boulevard is a positive factor and incorporate it to enhance the street scape and setting. A 2-lane, 3-lane, or 5-lane configuration can be used depending on the number of trips generated by surrounding existing and future land uses.

Street Function:	Provide access to major urban activity centers and provide connections to regional traffic ways such as Interstate 5. Traffic without a destination in Ashland should be encouraged to use regional traffic ways and discouraged from using boulevards.
Connectivity:	Connects neighborhoods to urban activity centers and to regional traffic ways such as Interstate 5.
Average Daily Traffic:	8,000 - 30,000 motor vehicle trips per day
Managed Speed:	25 mph - 35 mph
Right-of-Way Width:	• 61' - 87' for 2-Lane • 73' - 99' for 3-Lane • 95' - 121' for 5-Lane
Curb-to-Curb Width:	• 34' for 2-Lane • 46' for 3-Lane • 68' for 5-Lane

Motor Vehicle Travel Lanes:

- Two 11' travel lanes for 2-Lane
- Two 11' travel lanes, one 12' median/center turn lane for 3-Lane
- Four 11' travel lanes, one 12' median/center turn lane for 5-Lane

Bike Lanes: Two 6' bike lanes, one on each side of the street moving in the same direction as motor vehicle traffic

Parking: In 8' - 9' bays

Curb and Gutter: Yes 6" vertical/barrier curb

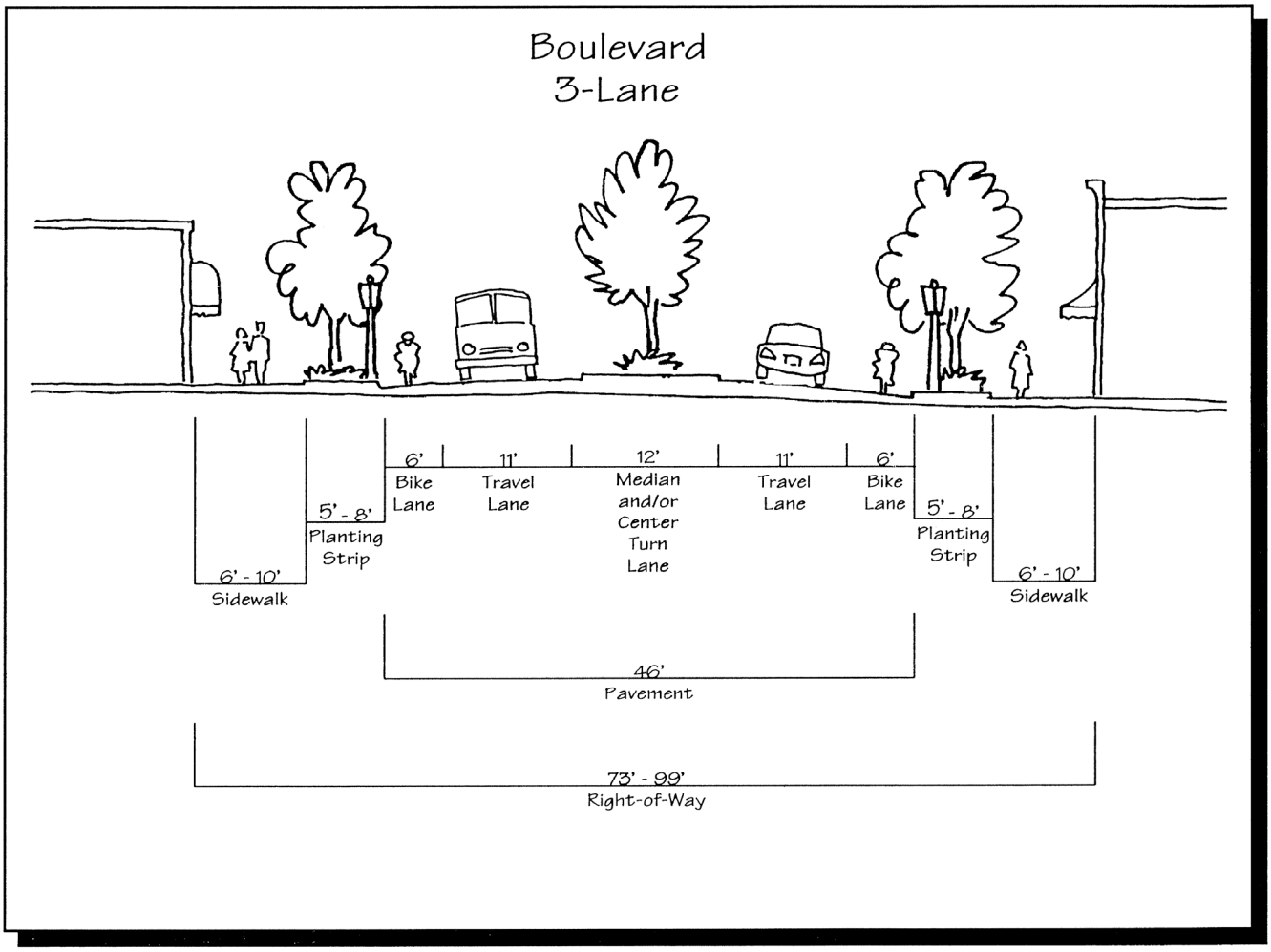
Parkrow:

- 7' - 8' landscape parkrow shall be installed in residential areas. Street trees shall be planted in the parkrow in accordance with the Street Tree Standards in the Site Design and Use Standards.

- 5' hardscape parkrow shall be used in commercial areas with on-street parking and where the street corridor has or will have a hardscape parkrow in place. Landscape parkrows may be appropriate in some commercial areas without on-street parking, or where the overall design concept for the street corridor includes a landscape parkrow. The minimum width of a landscape parkrow in commercial areas shall be 7'. Street trees shall be planted in the parkrow in accordance with the Street Tree Standards in the Site Design and Use Standards.

Sidewalks:

- 6' on both sides in residential areas.
- 8' – 10' on both sides in commercial areas. A 10' sidewalk shall be required on Boulevards in the Downtown Design Standards Zone.



Avenue

Avenues provide concentrated pedestrian, bicycle, transit and motor vehicle access from neighborhoods to neighborhood activity centers and boulevards. Avenues are similar to boulevards, but are designed on a smaller scale. Design should provide an environment where walking, bicycling, using transit and driving are equally convenient and should facilitate the avenue's use as a public space. A 2-lane, or 3-lane configuration can be used depending on the number of trips generated by surrounding existing and future land uses.

Street Function: Provide access from neighborhoods to neighborhood activity centers and boulevards.

Connectivity: Connects neighborhoods to neighborhood activity centers and boulevards.

Average Daily Traffic: 3,000 - 10,000 motor vehicle trips per day

Managed Speed: 20 mph - 25 mph

Right-of-Way Width:
- 59' - 86' for 2-Lane
- 70.5' - 97.5' for 3-Lane

Curb-to-Curb Width:
- 32' - 33' for 2-Lane
- 43.5' - 44.5' for 3-Lane

Motor Vehicle Travel Lanes:
- Two 10' - 10.5' travel lanes for 2-Lane
- Two 10' - 10.5' travel lanes, one 11.5' median/center turn lane for 3-Lane

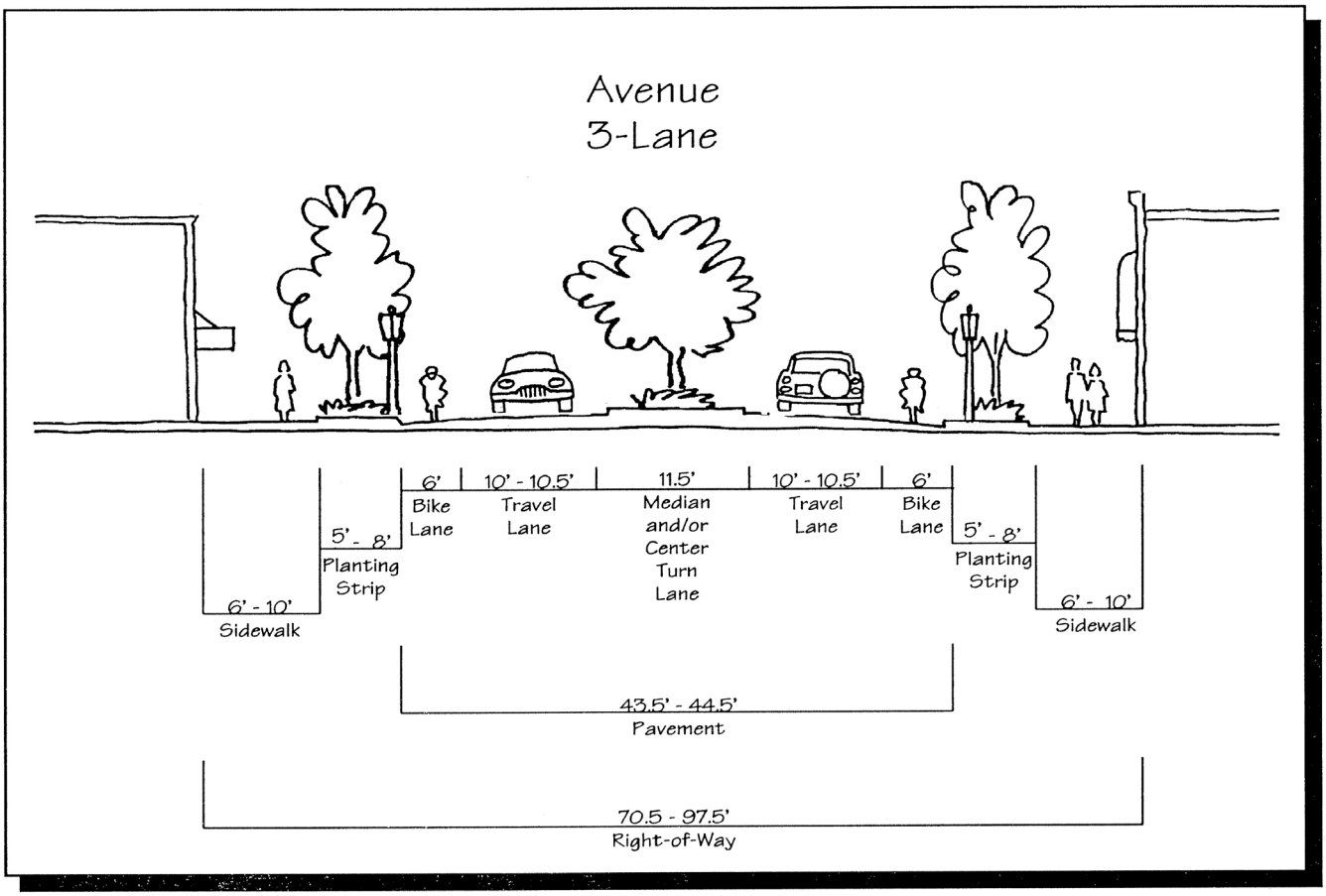
Bike Lanes: Two 6' bike lanes, one on each side of the street moving in the same direction as motor vehicle traffic

Parking: In 8' - 9' bays

Curb and Gutter: Yes, 6" vertical/barrier curb

Parkrow:
- 7' – 8' landscape parkrow shall be installed in residential areas. Street trees shall be planted in the parkrow in accordance with the Street Tree Standards in the Site Design and Use Standards.
- 5' hardscape parkrows shall be used in commercial areas with on-street parking and where the street corridor has or will have a hardscape parkrow in place. Landscape parkrows may be appropriate in some commercial areas without on-street parking, or where the overall design concept for the street corridor includes a landscape parkrow. The minimum width of a landscaped parkrow in commercial areas shall be 7'. Street trees shall be planted in the parkrow in accordance with the Street Tree Standards in the Site Design and Use Standards.

Sidewalks:
- 6' on both sides in residential areas.
- 8' – 10' on both sides in commercial areas.



Neighborhood Collector

Neighborhood Collectors provide access to neighborhood cores and gather traffic from various parts of the neighborhood and distribute it to the major street system. Different configurations with several on-street parking options are provided for residential and commercial areas.

Residential Neighborhood Collector

Street Function: Provide access in and out of the neighborhood.

Connectivity: Collects traffic from within residential areas and connects these areas with the major street network.

Average Daily Traffic: 1,500 to 5,000 motor vehicle trips per day

Managed Speed: 15 mph - 20 mph

Right-of-Way Width:
- 49' - 51' for No On-Street Parking
- 50' - 56' for Parking One Side
- 57' - 63' for Parking Both Sides

Curb-to-Curb Width:
- 22' for No On-Street Parking
- 25' - 27' for Parking One Side
- 32' - 34' for Parking Both Sides

Motor Vehicle Travel Lanes:
- Two 11' travel lanes for No On-Street Parking
- Two 9' - 10' travel lanes' for Parking One Side and Parking Both Sides

Bike Lanes: Generally not needed on low volume/low travel speed streets. If motor vehicle trips per day exceed 3,000, and/or actual motor vehicle travel speeds exceed 25 mph, a bike lane shall be required.

Parking:
- One 7' lane for Parking One Side
- Two 7' lanes for Parking Both Sides

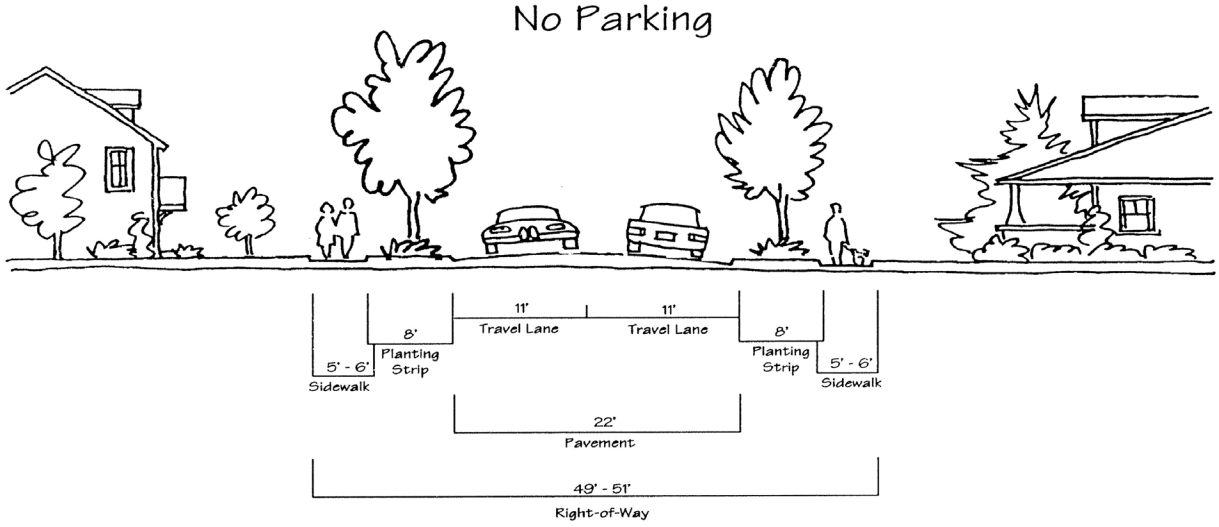
Parking may be provided in 7' bays rather than a continuous on-street parking lane.

Curb and Gutter: Yes, 6" vertical/barrier curb

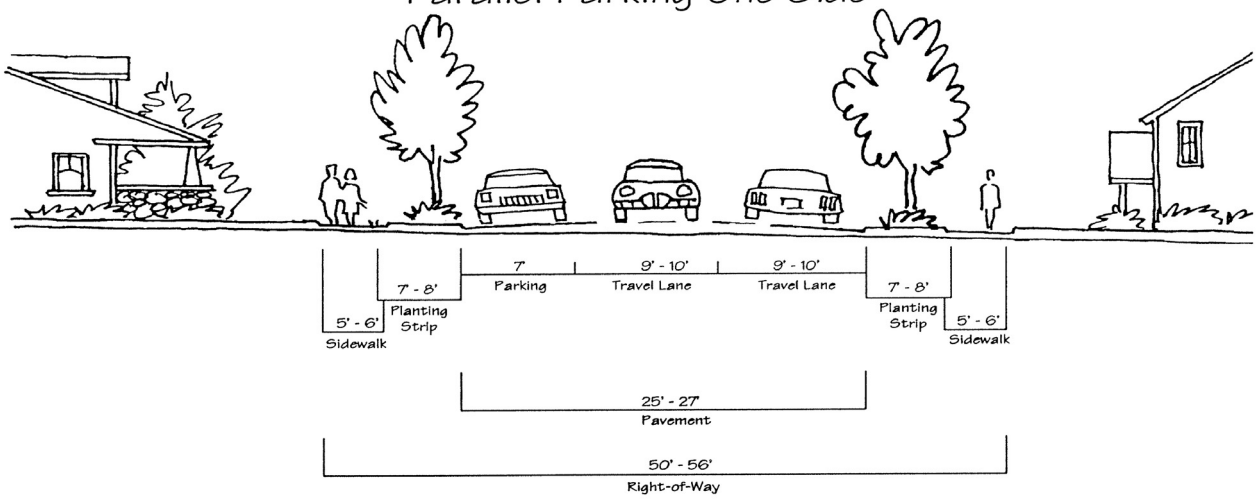
Parkrow:
- 8' parkrow on both sides for No On-Street Parking
- 7' - 8' parkrows on both sides for Parking One and Both Sides

Sidewalks: 5' - 6' on both sides, use 6' in high pedestrian volume areas with frequent 2-way foot traffic

Residential Neighborhood Collector
No Parking



Residential Neighborhood Collector
Parallel Parking One Side



Commercial Neighborhood Collector

Street Function: Provide access in and out of neighborhoods and to neighborhood core with shopping and services.

Connectivity: Collects traffic from within residential areas. Provides neighborhood shopping opportunities and connects these areas with the major street network.

Average Daily Traffic: 1,500 to 5,000 motor vehicle trips per day

Managed Speed: 15 mph - 20 mph

Right-of-Way Width:

- 55' - 65' for Parallel Parking One Side
- 63' - 73' for Parallel Parking Both Sides
- 65' - 74' for Diagonal Parking One Side
- 81' - 91' for Diagonal Parking Both Sides

Curb-to-Curb Width:

- 28' for Parallel Parking One Side
- 36' for Parallel Parking Both Sides
- 37' for Diagonal Parking One Side
- 54' for Diagonal Parking Both Sides

Motor Vehicle Travel Lanes: Two 10' travel lanes

Bike Lanes: Generally not needed on low volume/low travel speed streets. If motor vehicle trips per day exceed 3,000, and/or actual motor vehicle travel speeds exceed 25 mph, a bike lane may be needed.

Parking:

- One 8' lane for Parallel Parking One Side
- Two 8' lanes for Parallel Parking Both Sides
- One 17' lanes for Diagonal Parking One Side
- Two 17' lanes for Diagonal Parking Both Sides

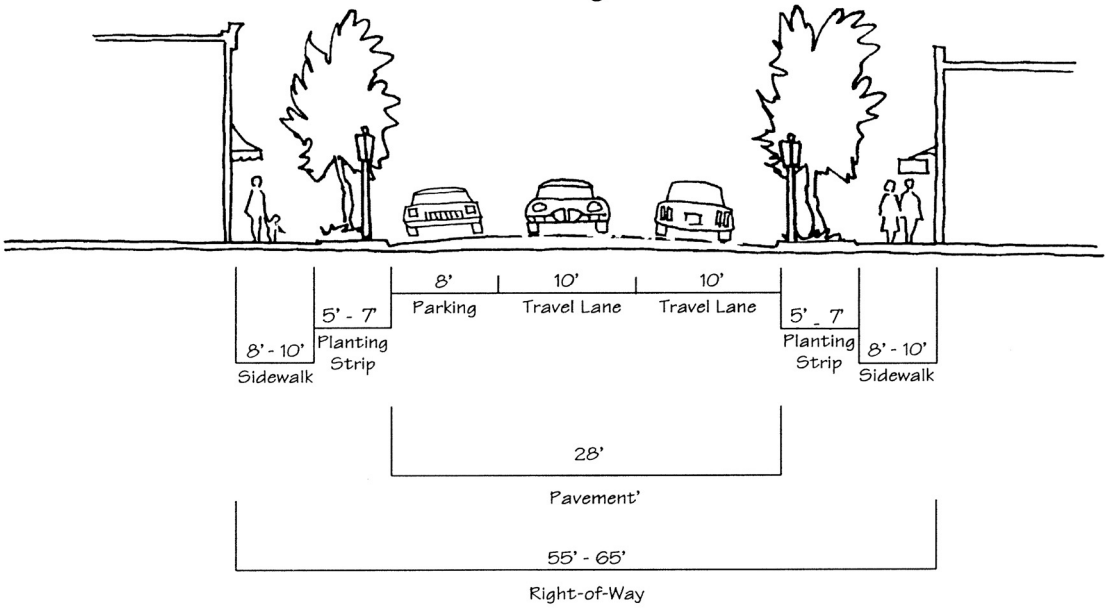
Parking may be provided in 7' bays rather than a continuous on-street parking lane.

Curb and Gutter: Yes, 6" vertical/barrier curb

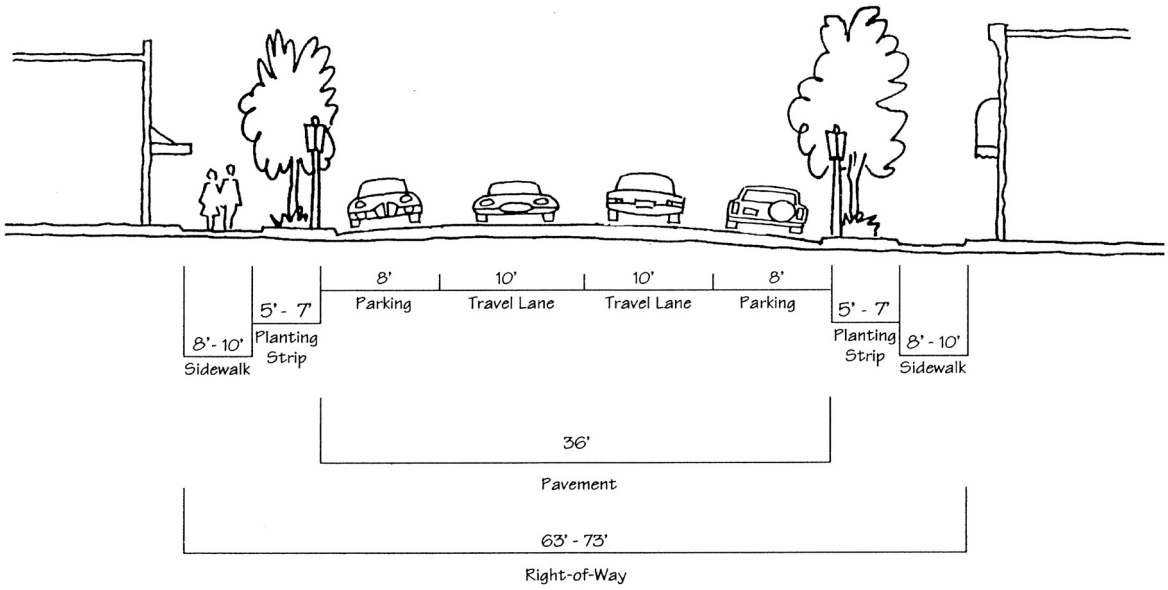
Parkrow: 5' hardscape parkrow shall be used in commercial areas with on-street parking and where the street corridor has or will have a hardscape parkrow in place. Landscape parkrows may be appropriate in some commercial areas without on-street parking, or where the overall design concept for the street corridor includes a landscape parkrow. The minimum width of a landscaped parkrow in commercial areas shall be 7'. Street trees shall be planted in the parkrow in accordance with the Street Tree Standards in the Site Design and Use Standards.

Sidewalks: 8' - 10' on both sides

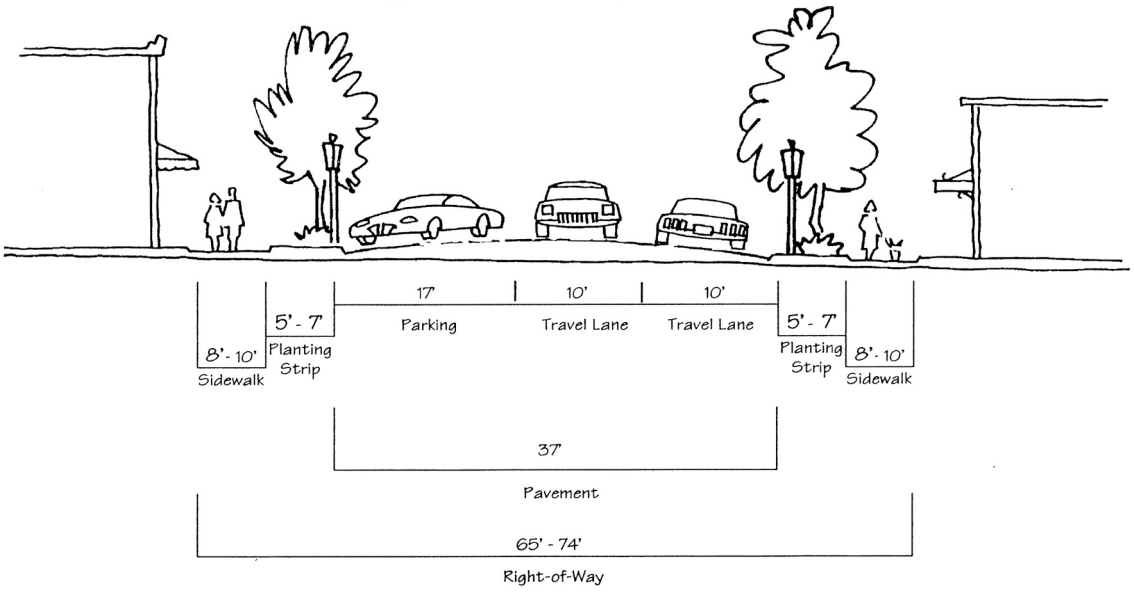
Commercial Neighborhood Collector
Parallel Parking One Side



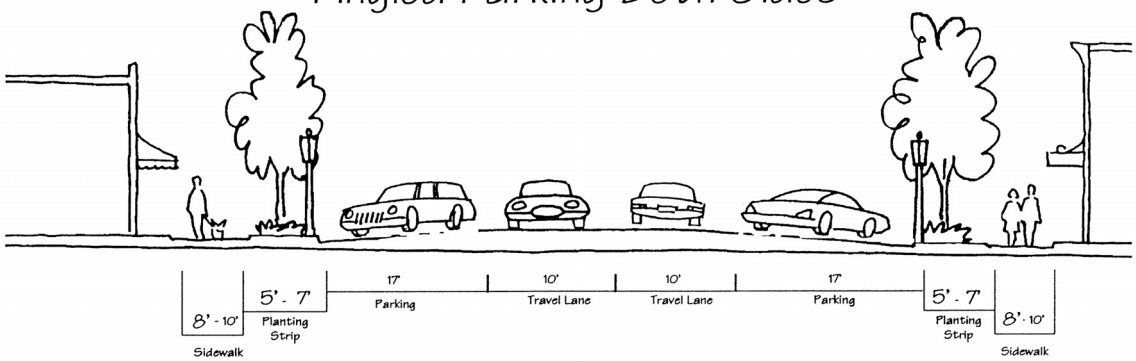
Commercial Neighborhood Collector
Parallel Parking Both Sides



Commercial Neighborhood Collector
Angled Parking One Side



Commercial Neighborhood Collector
Angled Parking Both Sides



Neighborhood Street

Neighborhood Streets provide access to individual residential units and neighborhood commercial areas. Different configurations with several on-street parking options are provided for residential and commercial areas.

Neighborhood Street: For use in the following single-family residential zones - WR (Woodland Residential), RR - 1 and RR - .5 (Low Density Residential, and R-1-3.5, R-1-5, R-1-7.5 and R-1-10 (Single-Family Residential) unless specifically noted.

Street Function: Provide access to individual residential units and commercial areas.

Connectivity: Connects to higher order streets.

Average Daily Traffic: 1,500 or less motor vehicle trips per day

Managed Speed: 10 mph - 20 mph

Right-of-Way Width:
- 47' - 51' for Parking One Side
- 50' - 57' for Parking Both Sides

Curb-to-Curb Width:
- 22' for Parking One Side
- 25' - 28' for Parking Both Sides

Motor Vehicle Travel Lanes:
- One 15' queuing lane for Parking One Side
- One 11' queuing lane for Parking Both Sides in the R-1 zone,
- One 14' queuing lane for Parking Both Sides in higher density residential areas (i.e. R-1-3.5, R-2 and R-3)

On local residential streets with adequate off-street parking, a single 14' wide traffic lane may be permitted for both directions of vehicle traffic. The single traffic lane is intended to create a "queuing street" such that when opposing vehicles meet, one of the vehicles must yield by pulling into a vacant portion of the adjacent parking lane. This queuing effect has been found to be an effective and safe method to reduce speeds and non-local traffic.

Bike Lanes: Generally not needed on low volume/low travel speed streets.

Parking:
- One 7' lane for Parking One Side
- Two 7' lanes for Parking Both Sides

Parking may be provided in 7' bays rather than a continuous on-street parking lane.

Curb and Gutter: Yes, 6" vertical/barrier curb

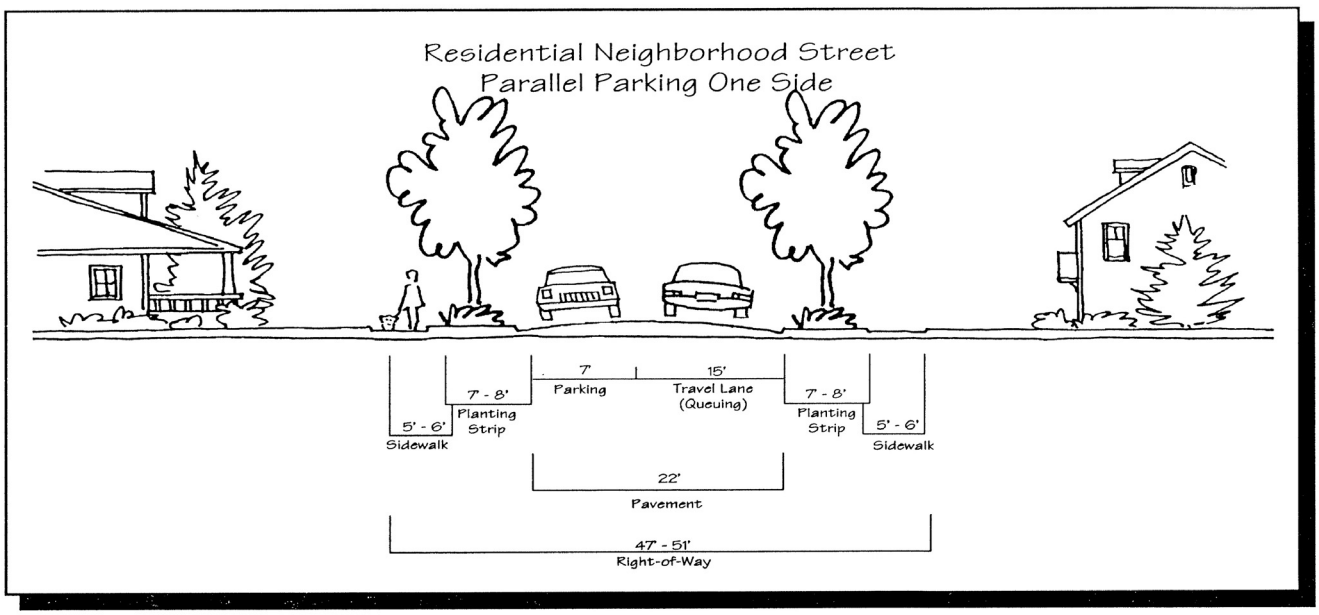
Parkrow:

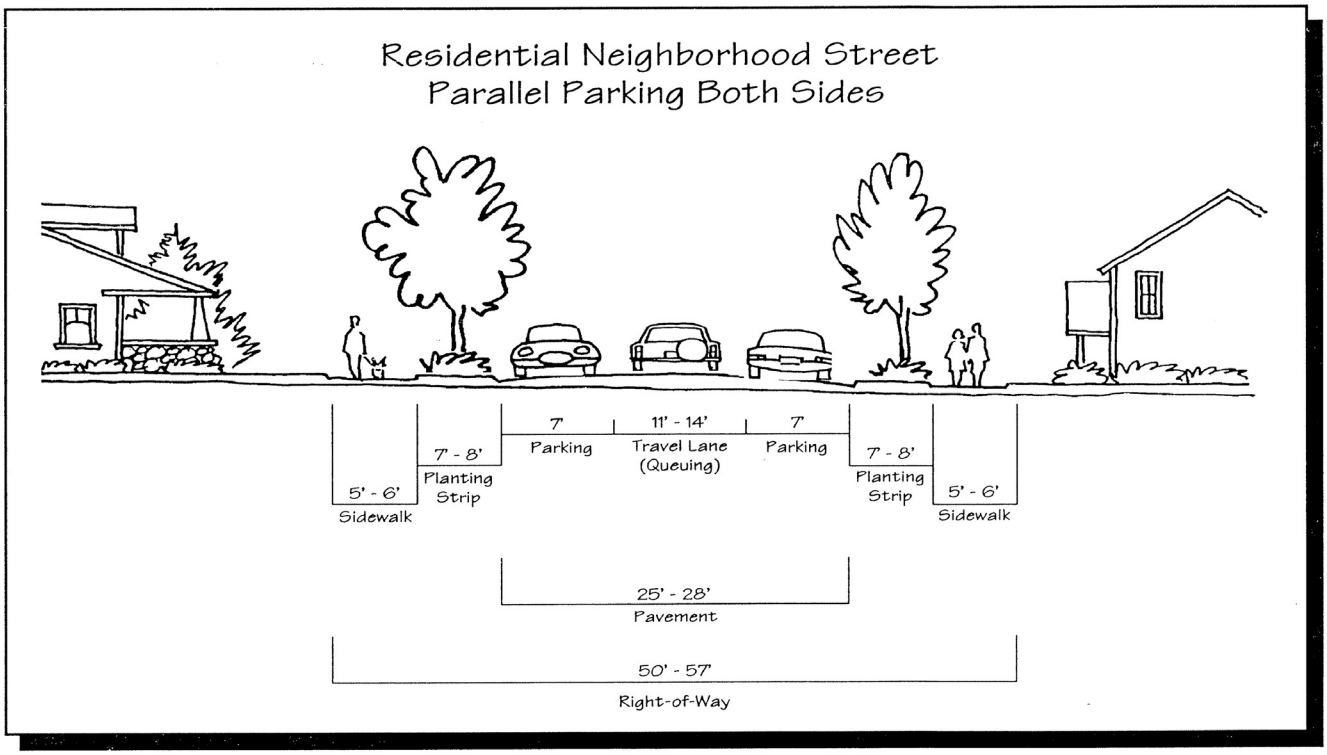
- 8' parkrow in residential areas on both sides for No On-Street Parking. Street trees shall be planted in the parkrow in accordance with the Street Tree Standards in the Site Design and Use Standards.

- 7' - 8' parkrows in residential areas on both sides for Parking One and Both Sides. Street trees shall be planted in the parkrow in accordance with the Street Tree Standards in the Site Design and Use Standards.

- 5' hardscape parkrow shall be used in commercial areas with on-street parking and where the street corridor has or will have a hardscape parkrow in place. Landscape parkrows may be appropriate in some commercial areas without on-street parking, or where the overall design concept for the street corridor includes a landscape parkrow. The minimum width of a landscaped parkrow in commercial areas shall be 7'. Street trees shall be planted in the parkrow in accordance with the Street Tree Standards in the Site Design and Use Standards.

Sidewalks: 5' - 6' on both sides, use 6' in high pedestrian volume areas with frequent 2-way foot traffic



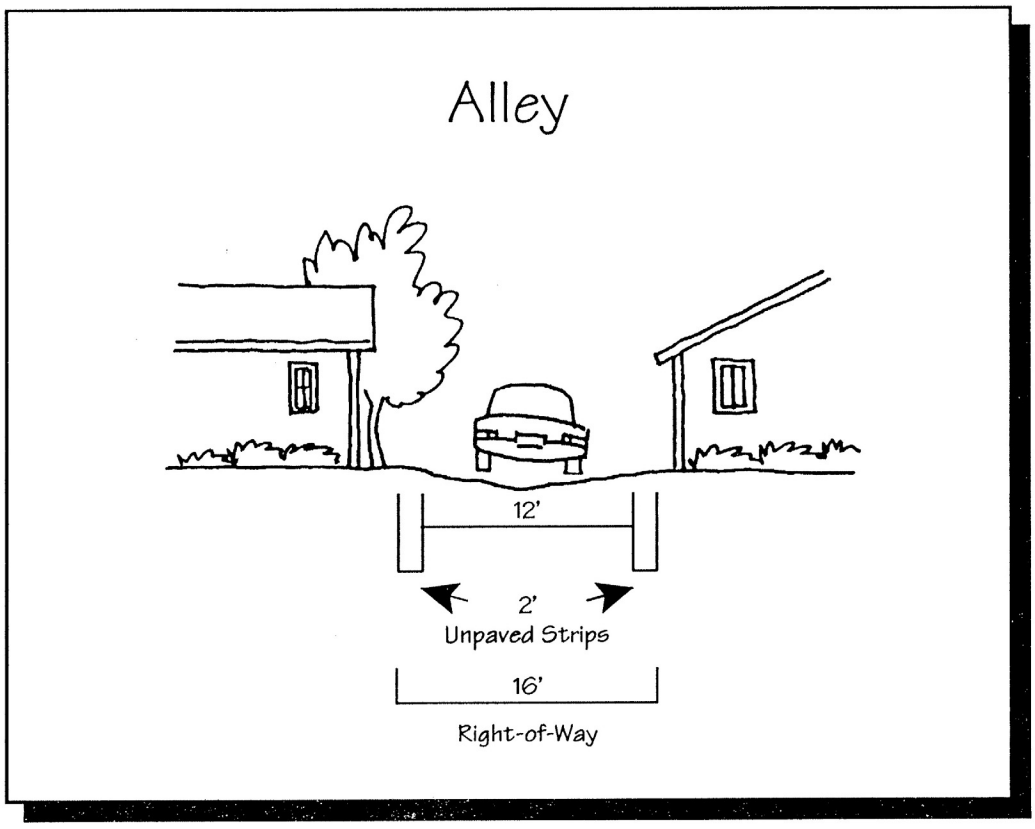


Alley

The alley is a semi-public neighborhood space that provides access via the rear of the property. The use of alleys eliminates the need for front yard driveways and provides the opportunity for a more positive front yard street scape, allows the street located adjacent to the front of properties to be designed using a narrow width with limited on-street parking, and creates the opportunity for the use of narrower lots to increase residential densities. Alleys are appropriate in all residential areas and in some commercial areas for business frontage. Alleys provide access and delivery depending on the circulation pattern of the area.

Street Function:	Provide rear yard access and delivery to individual residential and commercial properties, and an alternative utility placement area.
Connectivity:	Connects to all types of streets.
Average Daily Traffic:	Not applicable
Managed Speed:	Not applicable, motor vehicle travel speeds should be below 10 mph
Right-of-Way Width:	16'

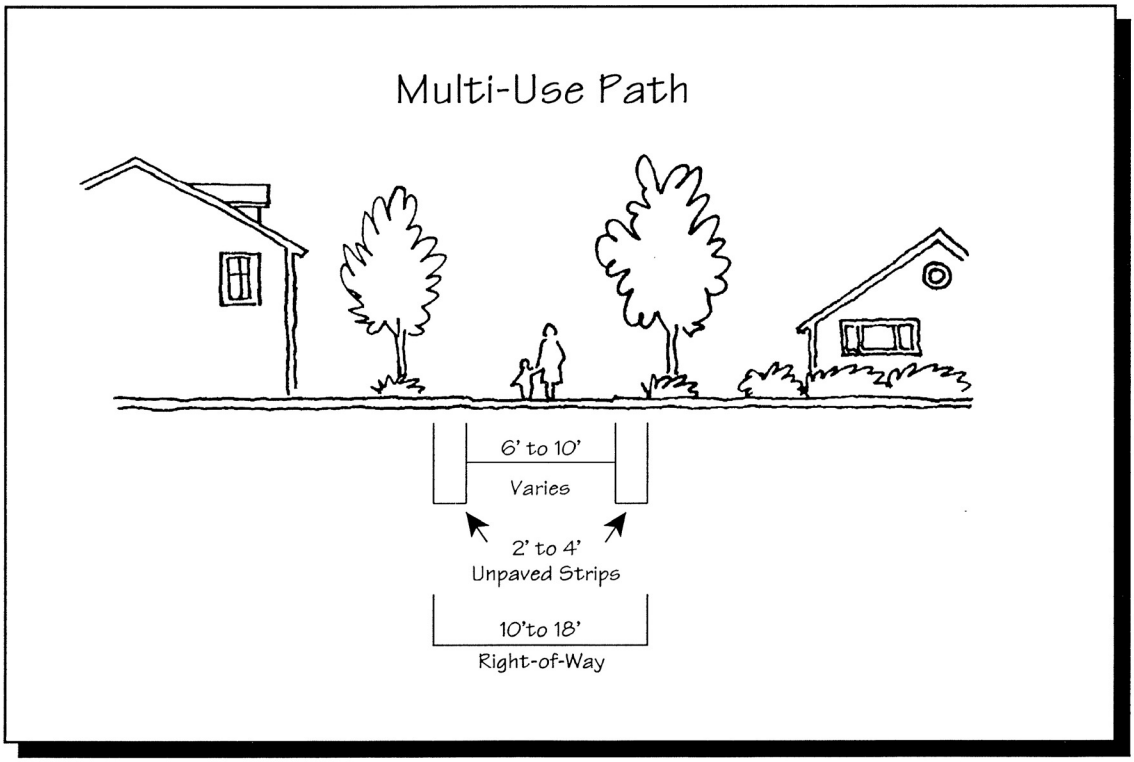
Pavement Width:	12' with 2' graveled or planted strips on side
Motor Vehicle Travel Lanes:	Not applicable
Bike Lanes:	Not applicable, bicyclists can easily negotiate these low use areas
Parking:	No parking within the right of way
Curb and Gutter:	No curb, use inverse crown
Parkrow:	Not applicable
Sidewalks:	Not applicable, pedestrians can easily negotiate these low use areas



Multi-use Path

Multi-use paths are off-street facilities used primarily for walking and bicycling. These paths can be relatively short connections between neighborhoods (neighborhood connections), or longer paths adjacent to rivers, creeks, railroad tracks and open space.

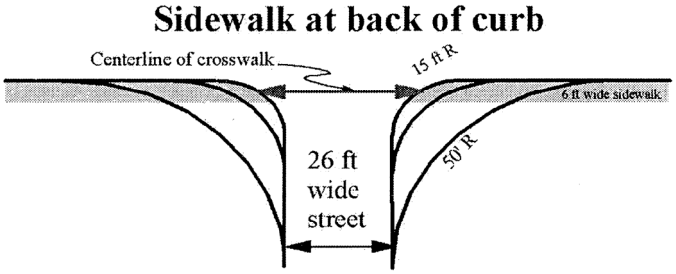
Function:	For pedestrians and bicyclists, provide short connections between destinations and longer paths in situations where a similar route is not provided on the street network.
Connectivity:	Enhances route options and shorten distances traveled for pedestrians and bicyclists.
Right-of-Way Width:	12' – 18'
Pavement Width:	6' – 10' with 2' – 4' graveled or planted strips on side
Curb and Gutter:	No curb



SECTION IV: CROSSWALKS AND STREET CORNER RADIUS

Pedestrians must be provided with the shortest possible route across street intersections. This is accomplished by using small curb radii and curb extensions. At the street corner, where one curbed street meets another is known as the curb return. The measure of the sharpness of the corner, or curb return is known as the curb return radius (Crr).

Effect of Corner Turning Radii
on Pedestrian Crossing Distances



Radius	Crossing Distance	Increased Crossing	Percent Increase
15'	37'	+11'	42%
25'	50'	+24'	92%
50'	89'	+53'	203%

Michael Wallwork, 1999

With a larger Crr, turning movements of right-turning vehicles are easier and possible at faster speeds, but the length of the crosswalk needed to cross the street for pedestrians at that point is also increased. As the Crr increases, the distance the pedestrian must cross increases, and the time it takes for the pedestrian to cross the intersection increases. Higher turning vehicular speeds are encouraged and dangerous "rolling stops" become more frequent. Table 2 exemplifies the affect on intersection crossings as Crr increases from 15 feet to 35 feet.

Table 2: Affect on Pedestrian Crossing of Curb Radius

SIDEWALK WIDTH	***6'***	***6'***	***6'***	***8'***	***8'***	***8'***	***10'***	***10'***	***10'***	***10'***
PARKROW WIDTH	***6'***	***6'***	***6'***	***6'***	***6'***	***6'***	***6'***	***6'***	***6'***	***6'***
CURB RETURN RADIUS	***15'***	***25'***	***30'***	***15'***	***25'***	***30'***	***15'***	***25'***	***30'***	***35'***
CROSSING DISTANCE ADDED TO STREET WIDTH	***2.5'***	***11.6'***	***17.2'***	***1.7'***	***10.0'***	***15.3'***	***1.1'***	***8.6'***	***13.6'***	***19.0'***
CROSSING TIME ADDED WITH ADDITIONAL STREET WIDTH (SECONDS)	***0.7***	***3.3***	***4.9***	***0.5***	***2.9***	***4.4***	***0.3***	***2.5***	***3.9***	***5.4***

from *Traditional Neighborhood Development Street Design Guidelines*, Institute of Transportation Engineers

Crosswalk and Curb Return Radius Standards

Approval Standards: New and reconstructed crosswalks and corners shall conform to the following curb return radius standards.

1. Crr Selection

Crr shall be selected based on reasonable anticipated vehicular and pedestrian traffic volumes, traffic types and intersection control devices.

2. Recommended Range for Neighborhoods

The Crr shall be between 10 to 15 feet in neighborhoods, excluding intersections involving boulevards.

3. Design for Large Vehicles

When designing Crr, allow for large vehicles to swing across the centerline of the street as per AASHTO standards.

4. On-Street Parking

On-street parking shall begin a minimum of 20 feet from any intersection involving boulevards and avenues to provide clear vision for pedestrians, bicyclists and drivers. This setback will also assist larger vehicles to turn.

5. Large Crr Mitigation

At intersections with Crr 15 feet or larger with high pedestrian traffic volumes, paver bulb outs, textured crossings and other appropriate traffic calming treatments shall be used to facilitate pedestrian travel.

6. Historic District

The Crr for newly constructed or reconstructed street corners in the Historic District shall match and in not exceed what historically has been used in the remainder of the Historic District.

7. Vision Clearance Area

No obstructions greater than 2.5 feet high, nor any landscaping which will grow greater than 2.5 feet high, with the exception of trees whose canopy heights are at all time greater than 8 feet, shall be placed in a vision clearance so that pedestrians and drivers can see each other. See 18.72.120 of the *Ashland Land Use Ordinance* for the vision clearance standards.

SECTION V: HILLSIDE STREETS AND NATURAL AREAS

Occasionally, streets are constructed in locations with significant natural features which require special accommodations such as in hilly areas, near creeks, rock outcroppings, drainages, or wetlands. In these cases, specific considerations should be made to minimize negative impacts. For example, wide streets along steep slopes require much larger hillside cuts than narrow streets. Streets constructed in hillside areas or natural resource areas should minimize negative impacts and use minimal cut and fill slopes.

Generally, the range of street types make it possible to construct or improve streets in accordance with the design standards. In certain situations, however, exceptions should be made. Exceptions could result in construction of meandering sidewalks, sidewalks on only one side of the street, or curbside sidewalk segments instead of setback walks.

Hillside Lands and Natural Area Street Standards

Approval Standards: Hillside Lands is defined in Chapter 18.62, P*hysical and Environmental Constraints*, of the *Ashland Land Use Ordinance*. Development of streets in Hillside Lands must be done in accordance with the standards in Chapter 18.62. Streets in Hillside Lands may require the following special accommodations.

1. Clear Travel Lane

New streets shall provide a 20 feet clear travel lane area in areas designated Hillside Lands.

2. On-Street Parking At Foot Steep Hills

Ample on-street or bay parking shall be provided at the foot of steep hills, especially those prone to snow and/or ice build up.

3. Preserving Natural Features

Streets shall be located in a manner which preserves natural features to the greatest extent feasible.

1. Whenever possible, street alignments shall follow natural contours and features so that visual and physical access to the natural feature is possible.

2. Streets shall be situated between natural features, such as creeks, mature trees, drainages, open spaces and individual parcels in order to appropriately incorporate such significant neighborhood features.

4. Exceptions to Street Design Standards

Generally, the range of local street types makes it possible to construct or improve local streets in accordance with the street design standards. In certain situations where the physical features of the land create constraints, or natural features should be preserved, exceptions may be made. Exceptions could result in construction of meandering sidewalks, sidewalks on only one side of the street, or curbside sidewalk segments instead of setback walks. In limited situations where topography or natural features preclude the construction of a sidewalk, a pedestrian path may be substituted on one side of the street at the discretion of the Planning Commission. A pedestrian path is an area designated for walking which is constructed to a lesser standard than the standard concrete sidewalk (i.e. asphalt, crushed granite). Exceptions shall be allowed when physical conditions preclude development of a public street, or components of the street. Such conditions may include, but are not limited to, topography, wetlands, mature trees, creeks, drainages, and rock outcroppings. Exceptions to the Street Design Standards shall be limited to situations where there is demonstrable difficulty in meeting the specific requirements due to a unique or unusual aspect of the site.

5. Dead End Streets

Generally, the range of local street types make it possible to construct or improve local streets in accordance with the street design standards. In certain situations where the physical features of the land create severe constraints, or natural features should be preserved, exceptions may be made. Dead-end streets may be permitted in areas where topographic, wetland, creeks or other physical features of the land preclude street connections. Only neighborhood streets may be dead end roads. No dead end street shall exceed 500 feet in length, not including the turnaround.

SECTION VI: DRIVEWAY APRON AND CURB CUTS

Driveway aprons, often referred to as private accesses, affect the safety, capacity and character of a street. Motorists turning into and out of private driveways or parking lots can be the source of potential conflicts with pedestrians, bicyclists and motor vehicles. In addition, motorists entering and exiting the street system slow down traffic and thereby reduce the traffic flow and street capacity.

In Ashland, the Railroad District is well used by pedestrians. There are many factors which affect the large amount of foot traffic such as interesting architecture, relatively flat terrain, large parkrows with many trees, and the close proximity to the downtown. However, one of the street design elements which makes the pedestrian environment convenient, safe and inviting is the minimal amount of automobile traffic pulling in and backing out of driveways which cross the sidewalk.

Every driveway apron is a challenge for pedestrians. As the number of private accesses increases, the sidewalk loses continuity as the surface dips up and down with the driveway curb Cuts. Even able-bodied pedestrians can have trouble negotiating excessive dips and cross-slopes. The combination of an uneven surface and the continuous potential threat of a motor vehicle impeding on the sidewalk negatively affects the pedestrian environment and the character of the street

Public accesses, meaning public streets, can have the same affect on safety and capacity of the street system. However, as long as streets are spaced at reasonable distances, the potential impact is not as great as having numerous driveway curb cuts within one block length.

The *Driveway Apron and Curb Cut Standards* apply to private accesses on neighborhood collector and neighborhood streets. *Chapter 8, Access Management*, of the *Transportation System Plan* is the ruling document concerning the spacing of private and public accesses on boulevards and avenues.

Driveway Apron and Curb Cut Standards

Approval Standards: New, reconstructed streets, curb cuts and driveway aprons shall conform to the following driveway apron and curb cut standards.

1. Spacing

Driveway curb cuts shall be spaced at least 24 feet apart as measured between the bottoms of the existing or proposed apron wings of the driveway approaches.

2. Width

The width of driveway curb cuts and aprons shall be n1inimized in the parkrow and sidewalk area. The driveway width may be increased in the private yard area.

3. Shared Driveways

The number of driveway intersections with streets shall be minimized by the use of shared driveways with adjoining lots where feasible.

4. Number of Driveway Curb Cuts Per Lot

For single-family and multi-family developments, one driveway curb cut is permitted per lot. Larger multi-family developments may require more than one driveway curb cut. For commercial and industrial developments, driveway curb cuts shall be minimized where feasible.

5. Alley Access

If a property has alley access, a curb cut for a driveway apron is not permitted.

SECTION VII: LOCAL IMPROVEMENT DISTRICTS AND STREET RIGHT-OF-WAY IMPROVEMENTS

A local improvement district (LID) is a district formed for the purpose of carrying out local improvements (i.e. paving of streets, construction of storm sewers). Property owners within the LID are assessed for the cost of the improvements. In Ashland, LID's are used to improve streets, and are used in a variety of situations. In some cases, development has preceded the street improvement with property owners signing in favor of participating in the cost at a later date. In these situations, the unpaved road must be designed to fit within the public right-of-way and the surrounding development. In other cases, the street is built prior to any adjacent development and the street design process tends to be more flexible.

Generally, the range of street types make it possible to construct or improve streets in accordance with the design standards. In certain situations where adjacent development has occurred prior to the street improvement, constraints may occur due to natural features or the built environment, and exceptions to the street design standards may be made. For example, exceptions could result in construction of a narrower curb-to-curb width, meandering sidewalks, sidewalks, sidewalks on only one side of the street, or curbside sidewalk segments instead of setback walks.

Local Improvement District (LID) Standards

Approval Standards: Streets built and funded using a local improvement district (LID) may be constrained by natural features and/or the built environment, and as a result, shall be allowed the exceptions to the street design standards as described below.

1. Curb-to-Curb Width

Street improvements constructed through a LID shall be permitted to reduce the required curb-to-curb width to preserve significant natural features, to accommodate existing structures and to ensure compatibility with the surrounding neighborhood. A reduction in the required curb-to-curb width shall require the approval of the Ashland Planning, Engineering, Police and Fire Departments.

2. Exceptions to Street Design Standards

Generally, the range of local street types make it possible to construct or improve local streets in accordance with the street design standards. In certain situations where the physical features of the land or existing neighborhood create constraints, or natural features should be preserved, exceptions may be made. Exceptions could result in construction of meandering sidewalks, sidewalks on only one side of the street, or curbside sidewalk segments instead of setback walks. In limited situations where topography or natural features preclude the construction of a sidewalk, a pedestrian path may be substituted on one side of the street at the discretion of the City Council. A pedestrian path is an area designated

for walking which is constructed to a lesser standard than the standard concrete sidewalk (i.e. asphalt, crushed granite). Exceptions to the Street Design Standards shall be limited to situations where there is demonstrable difficulty in meeting the specific requirements due to a unique or unusual aspect of the site.

3. Retrofitting Existing Paved Streets With Sidewalks and Parkrows

In some cases, streets have wider curb-to-curb widths than is currently required. When retrofitting existing paved streets with sidewalks and/or parkrows, constructing sidewalks and/or parkrows from the curb line in towards the centerline (on top of existing pavement) may be permitted in certain situations. Building sidewalks and/or parkrows in place of existing pavement is generally limited to situations where a sidewalk and/or parkrow will be continuous along the entire side of the street.

4. Preserving Natural Features

A. Streets shall be located in a manner which preserves natural features to the greatest extent feasible.

1. Whenever possible, street alignments shall follow natural contours and features so that visual and physical access to the natural feature is possible.

2. Streets shall be situated between natural features, such as creeks, mature trees, drainages, open spaces and individual parcels in order to appropriately incorporate such significant neighborhood features.