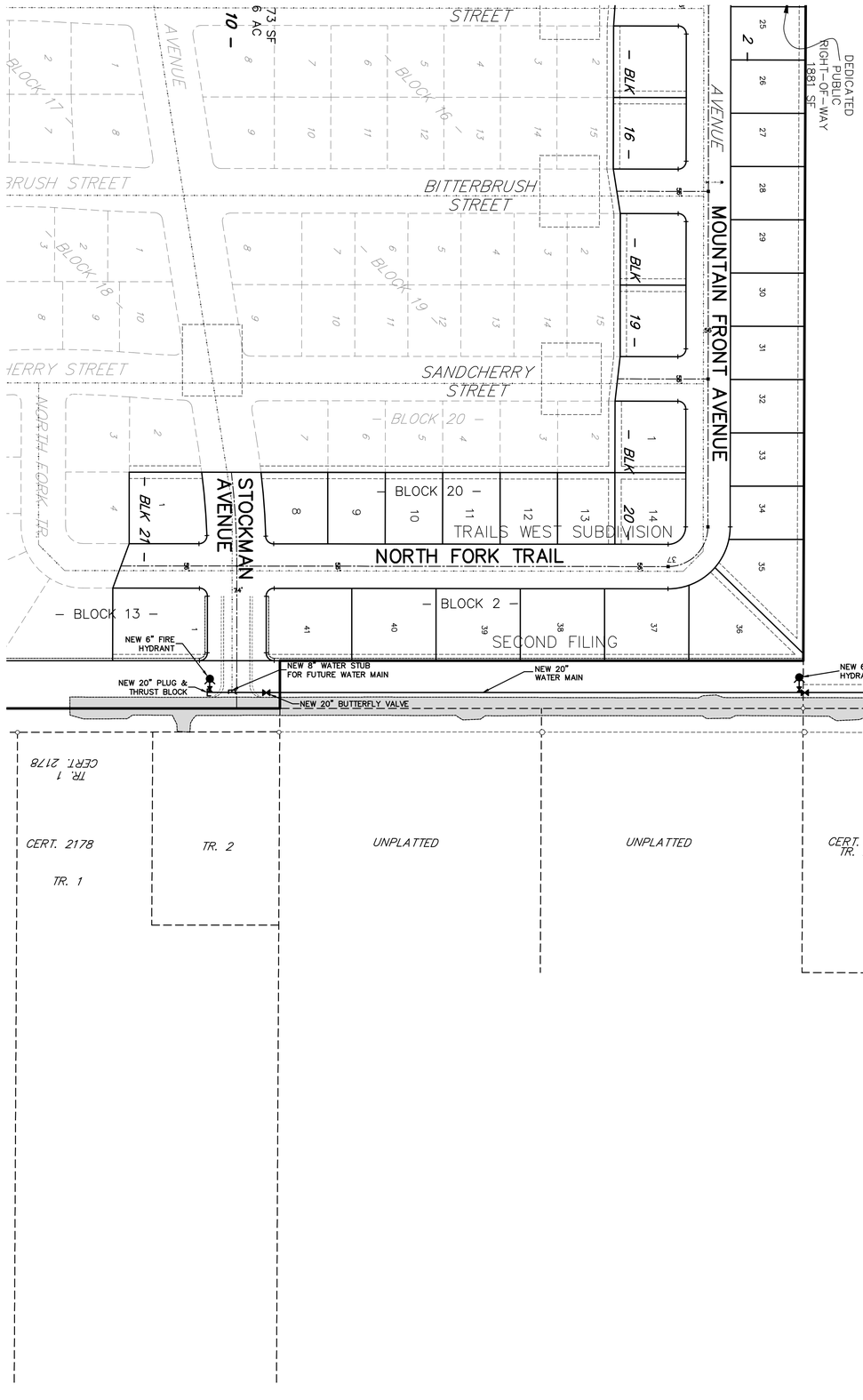

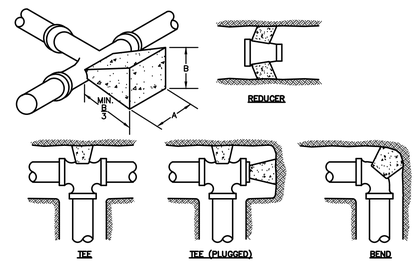

Pipe Size	Tees and Plugs		90 - Degree Bends		45 - Degree Bends		22.5 - Degree Bends and Reducers		11.25 - Degree Bends	
	A - Dimension	B - Dimension	A - Dimension	B - Dimension	A - Dimension	B - Dimension	A - Dimension	B - Dimension	A - Dimension	B - Dimension
(in)	ft in	ft in	ft in	ft in	ft in	ft in	ft in	ft in	ft in	ft in
6	3 9	3 0	4 7	3 6	3 2	2 9	2 3	2 0	1 6	1 6
8	5 6	3 6	6 9	4 0	5 0	3 0	3 0	2 6	2 0	2 0
20	12 8	6 6	NA NA	NA NA	10 6	6 0	6 6	5 0	4 8	3 6

NOTES:

1. THIS TABLE IS BASED ON A 6.5-FT BURY DEPTH, 150 PSI TEST PRESSURE, & 1000 PSF SOIL BEARING PRESSURE. THE THRUST BLOCK SIZING CALCULATIONS INCLUDE A FACTOR OF SAFETY OF 1.50. THE SOIL BEARING PRESSURE IS BASED ON A SOFT CLAY NATIVE SOIL. IF SOIL CONDITIONS AT THE THRUST BLOCK LOCATION ARE DIFFERENT THAN SOFT CLAY, NOTIFY THE ENGINEER AND THRUST BLOCK SIZES MAY BE MODIFIED AS DETERMINED BY THE ENGINEER BASED ON ACTUAL SOIL CONDITIONS ENCOUNTERED IN THE FIELD.
2. WRAP ALL FITTINGS WITH POLYETHYLENE.
3. ALL THRUST BLOCKS SHALL BE FORMED TO THE SHAPE ABOVE. UNFORMED BLOCKS WILL BE REJECTED. THE MAX FLARE ANGLE FROM THE FITTING TO THE BACK OF THE TRENCH WALL SHALL BE 45 DEGREES.
4. BLOCK HEIGHT SHOULD BE EQUAL TO OR LESS THAN ONE-HALF THE TOTAL DEPTH TO THE BOTTOM OF THE BLOCK, BUT NOT LESS THAN THE PIPE DIAMETER. ADJUST BLOCK DIMENSIONS AS NEEDED TO MEET THIS REQUIREMENT WHILE MAINTAINING THE EQUIVALENT BLOCK AREA SHOWN IN THE DETAIL. BLOCK HEIGHT SHOULD BE CHOSEN SUCH THAT THE CALCULATED BLOCK WIDTH VARIES BETWEEN ONE AND TWO TIMES THE HEIGHT.
5. THRUST BLOCKS ARE REQUIRED AT ALL TEES, PLUGS, REDUCERS, CAPS & AT BENDS DEFLECTING 11.25° OR MORE REGARDLESS OF WHETHER THEY ARE WITHIN A RESTRAINED JOINT SECTION OF PIPE. ALL HYDRANTS SHALL REQUIRE A THRUST BLOCK AT THE HYDRANT IN ADDITION TO THE BEARING BLOCK.

THRUST BLOCKING FOR WATER FITTINGS

NOT TO SCALE

GOVERNMENT LOT 1
UNPLATTED

EX. 20" WATER MAIN
EX. 27" SAN. SEWER MAIN
EX. FIRE HYDRANT & GATE VALVE
CONNECT TO EX. 20" WATER MAIN
NEW 20" BUTTERFLY VALVE
EX. 20" BUTTERFLY VALVE
EX. SAN SEWER MANHOLE

125-128, SUNNY COVE FRUIT FARMS

NOTE:

-EXISTING UNDERGROUND INSTALLATIONS & PRIVATE UTILITIES SHOWN ARE INDICATED ACCORDING TO THE BEST INFORMATION AVAILABLE TO THE ENGINEER. THE ENGINEER DOES NOT GUARANTEE THE ACCURACY OF SUCH INFORMATION. SERVICE LINES (WATER, POWER, GAS, STORM, SEWER, TELEPHONE & TELEVISION) MAY NOT BE STRAIGHT LINES OR AS INDICATED ON THE PLANS. STATE LAW REQUIRES CONTRACTOR TO CALL ALL UTILITY COMPANIES BEFORE EXCAVATION FOR EXACT LOCATIONS.

-ALL IMPROVEMENTS SHALL BE PERFORMED IN ACCORDANCE WITH MONTANA PUBLIC WORKS STANDARD SPECIFICATIONS 6TH EDITION, APRIL, 2010, AND THE CITY OF BILLINGS STANDARD MODIFICATIONS, DATED MARCH, 2013.

-UNLESS OTHERWISE SPECIFIED, ALL CONSTRUCTION LAYOUT AND STAKING SHALL BE PERFORMED UNDER THE RESPONSIBLE CHARGE OF A LAND SURVEYOR LICENSED IN THE STATE OF MONTANA AND BY A PARTY CHIEF OR ENGINEERING TECHNICIAN EXPERIENCED IN CONSTRUCTION LAYOUT AND STAKING TECHNIQUES AS ARE REQUIRED BY THE SPECIFIC TYPE OF WORK BEING PERFORMED.

NORTH

80 40 0 80 160

SCALE: 1" = 80'

PRELIMINARY
FOR BIDDING PURPOSES

TO PLAN AND DESIGN ENDURING COMMUNITIES...

SANDERSON STEWART
www.sandersonstewart.com

MONTANA
JEFFREY D. HEIDNER
15334PE
12/31/15
LICENSED PROFESSIONAL ENGINEER

DATE: 09/25/2014
FILE: 05051_11_BASE.DWG
PROJECT NO: 05051.11
CAD: JAS/BEG
QUALITY ASSURANCE: DR 09/23/14

REVISIONS

DATE	DESCRIPTION
09/18/14	PRELIM FOR REVIEW

PRIVATE CONTRACT NO. 693
56TH STREET WEST WATER MAIN EXTENSION
SITUATED IN THE NE1/4 OF SECTION 5, T. 1 S., R. 25 E., P.M.M.
BILLINGS, MONTANA
OVERALL PLAN

2.0