HP18-041
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STORM WATER MANAGEMENT
and
EROSION CONTROL PLAN
for
BONNER COUNTY EMS FACILITY ON KOOTENAI CUTOFF ROAD

Project:	The applicant is proposing to construct a new building with associated driveway and parking area within the City of Ponderay. Proposed impervious surfaces include a building, paved driveway and parking areas as well as concrete sidewalk.
Owner:	Bonner County EMS 1500 Highway 2 Sandpoint, ID 83852
Prepared by:	James A. Sewell & Associates, LLC 1319 North Division Avenue Sandpoint, Idaho 83864
Date:	April 23, 2018

PROFESSIONAL ENGINEER LICENSED 14031 4-23-18 STATE OF IDAHO JEFF JENSEN

INTRODUCTION

The purpose of this report is to assess the capability of the proposed site to manage storm water runoff and control erosion from impervious surfaces attributed to the construction of a commercial building, paved driveway and parking areas.

The scope of this report is based on and limited to the known general and specific topography of the site, soil types as identified by site inspection, information obtained from the "Soil Survey of Bonner County", and observed surface site features.

EXISTING SITE CONDITIONS

The project site consists of two lots totaling about 0.78 acres. The site is currently undeveloped with the exception of a small amount of sidewalk along the eastern property line adjacent to Moody Lane. The site is bordered on the north by Kootenai Cut-Off Road. The roadways are approximately 18 inches in elevation higher than the remainder of the site. In general, the site is vegetated with native vegetation and there a view large trees along the northern property line. The site is very flat with a slight slope towards the south and there is standing water on the site during the spring.

PROPOSED CONDITIONS

A new commercial building is proposed for the lot. The building will serve as a satellite facility station for the Bonner County EMS department and will house two (2) employees during each shift. There are some living quarters with kitchen, bathrooms and sleeping areas as well as an attached garage to park EMS vehicles. The building will be accessed via a concrete approach and paved driveway from Moody Lane and there will be some covered employee parking adjacent to the building. Concrete sidewalk is proposed along the northern property boundary along Kootenai Cutoff Road. The proposed building will be elevated approximately 18 inches above the existing grade and fill will be imported to constructed the driveway and parking areas. Vegetation at the site will be maintained to the extent possible and all disturbed soil areas will be reseeded following the completion of construction.

SOILS

The Bonner County Soil Survey indicates that the site is located in an area that contains Odenson silt loam. Properties of the soil are found below:

Odenson silt loam, 0 to 2 percent slopes

Setting:

Position on Landscape:	terraces
Elevation:	2,120 – 2,240 feet
Mean Annual Precipitation:	32 inches
Mean Annual Temperature:	45° F
Frost Free Season:	100 days

Typical Profile:

0-9 inches:	grayish brown and brown, neutral and mildly alkaline silt loam
9-35 inches:	mottled, white and pale yellow, mildly alkaline and moderately alkaline silt clay loam
35 to 65 inches+:	mottled, pale yellow, moderately alkaline, stratified silt loam, silty clay loam, silty clay and very fine sandy loam

Soil Properties:

Root Zone Depth	6 to 24 inches, limited by seasonal high water
Drainage:	poorly drained
Permeability:	slow
Available Water:	high
Seasonal Water Table Depth:	6 to 24 inches
Runoff:	very slow
Hazard of Water Erosion:	none to slight

From the Soil Survey of Bonner County Area, Idaho, 1982 published by the USDA Soil Conservation Service. With the implementation of proper storm water best management practices, the soils are conducive to the proposed construction.

STORM WATER MANAGEMENT DESIGN PARAMETERS

Storm water collection facilities in this report are designed to intercept and treat runoff from created impervious surfaces attributed to new building and driveway construction. Storm water collection facilities described in this report are designed to capture the first half inch of runoff from the created impervious surface areas and ensure that there will be no measurable increase in the peak rate of runoff from the site after development when compared with the runoff rate from the undeveloped state, for a 25-year storm, as required by the City of Ponderay code. The following calculations demonstrate these requirements for both storage and treatment structures.

Created Impervious Surfaces

As noted above, there are no improvements on the site except for some sidewalk and most of the sidewalk is located within the right-of-way. For purposes of this report all existing and proposed sidewalk at the site will be considered created impervious surfaces. Total created impervious surfaces created at the site is as follows:

Building and Covered Parking	3,450 sf
Driveway and Approach	5,720 sf
Kootenai Cut-off Sidewalk	540 sf
Total	9,710 sf

First ½" of Runoff — 405 cf (9,710 sf x ½" of runoff)

Existing Conditions:

Time of Concentration – The time of concentration has been calculated using a simplified version of the Manning's kinematic solution for sheet flow up to 300 ft in length.

$t_c = 0.007(nL)^{0.8}/(P_2)^{0.5}S^{0.4})$

where:

n = 0.2 (Manning's roughness coefficient, grasses)

L = 300' (longest watershed length)

P_2 = 1.8 (2-year, 24-hour rainfall in inches)

S = 0.005 ft/ft (slope)

t_c = 69 min. (use 75 min. for design)

Rational Method

C = 0.74, Soil type D, Grass — Area = 0.778 acres

Total Composite C = 0.74

I = 0.70 inches per hour for the 25-year, 75-minute storm event

A = 0.778 acres (tributary drainage area)

Q = 0.40 cfs

Therefore, **0.40 cfs** is the estimated peak flow rate of discharge from the existing site and the maximum discharge rate from the site following improvements.

Proposed Construction:
Time of Concentration
$t_c = 0.007(nL)^{0.8}/(P_2)^{0.5}S^{0.4})$
where:
n = 0.016 (Manning's roughness coefficient, pavement)
L = 300' (longest watershed)
P_2 = 1.8 (2-year, 24-hour rainfall in inches)
S = 0.005 ft/ft (slope)

gives:
t_c = 9.1 min. (use 10 min. for design)

Rational Method:
C = 0.74, Soil type D, Grass Area = 0.555 acres
C = 0.99, Buildings, Pavement, Concrete Area = 0.223 acres
Total Composite C = 0.812
I = 2.1 inches per hour for the 25-year, 10-minute storm event
A = 0.778 acres
Q = 1.33 cfs

Grassy Infiltration Areas (GIA)
Infiltration Rate:
The proposed GIA wraps around the proposed construction along the northern, western and southern sides of the parking area and building locations. The GIA is designed to detain the increase in runoff attributed to proposed building and driveway construction on the property. Because of the low permeability of the native soils, it is assumed that no water will be infiltrated through the swale area. Therefore, a controlled method of releasing the water off-site has been designed to drain the swale at a rate at or below the pre-development rate.

The outflow rate from the proposed GIA will be regulated by a 90-degree V-notched weir with a bottom width of 8". Flow balance tables have been calculated for each 25-year storm in order to determine the height in the swale and the corresponding outflow rate at each minute of every storm. A swale area was sized that satisfied both of the following conditions: the outflow rate at the weir staying at or below the pre-development rate and the height in the GIA not exceeding the design depth of 6 inches (0.50 ft).

In order to limit the weir outflow rate to pre-development rate (0.40 cfs), a minimum swale area of 2,350 sf is needed. A maximum swale depth of 0.49 ft is reached during the 35-minute storm, which corresponds to a weir outflow rate of 0.38 cfs. Since this is the maximum rate allowed by the swale, the swale depth will not exceed 0.50 ft (which is equal to the design depth). The maximum storage area required to mitigate the increase in runoff for the 25-year storm event is 1,142 cf. A calculation summary can be found in Appendix B, along with the individual flow balance tables for the controlling storm.

Storage Volume Required
As required by City of Ponderay code the storm water facilities shown have been designed to detain a volume equal to the first one-half inch (1/2") of runoff over the tributary created impervious area. The

storm water facilities have also been designed to accommodate the 25-year storm event and not discharge water at a rate greater than the pre-development peak runoff rate. The Bowstring Method has been implemented to ensure that the peak discharge rate of the post-developed site not exceed that to the pre-development site. A summary can be found in Appendix B.

The storage volume required is the larger of the following:

First ½" of runoff from impervious surface areas:	405 cf
Storage required to mitigate peak flow	1,142 cf

Storage Volume Provided

Storage Volume Provided	1,513 cf

The total storage volume shown on the plans is 1,513 cf utilizing an design depth of 6" and 2:1 maximum side slopes. See Appendix B for storm water calculations.

Calculations Summary

The volumes of the proposed GIA exceeds the requirements set forth by the City of Ponderay code. The total volume of the proposed GIA is greater than that volume of the first ½ inch of runoff from created impervious surfaces and there will be no increase in the peak storm water runoff rate from the site as compared to the pre-development conditions.

TEMPORARY EROSION CONTROL PLAN

Erosion control shall be maintained through the use of existing vegetation, silt fencing, reseeding of areas denuded of vegetation, and straw mulching. Silt fencing shall be placed downslope of construction areas as shown in the storm water management plan. Areas where construction activities temporarily cease for more than 21 days shall be stabilized with seeding or straw mulching. All erosion control measures shall be maintained in good working order. The Contractor shall be responsible for maintenance of erosion control measures until such time that final stabilization of the site is complete. Once final stabilization is complete, the owner shall be responsible for maintenance of permanent erosion control measures.

Site Re-Vegetation

Existing grass and meadow areas disturbed during construction shall be reseeded as soon as possible after finish grading. Seed mixture recommendations may be obtained from the U.S.D.A. Natural Resource Conservation Service, landscape architect or a commercially marketed grass mixture may be applied according to the attached instructions.

Fertilization

It is recommended that a soil analysis be performed prior to fertilization and seeding. The fertilization guidelines should be determined by the soils analysis. The fertilizer type and rate of application should follow the recommendation of the U.S.D.A. Natural Resource Conservation Service or landscape architect.

MAINTENANCE AND CONSTRUCTION

During Construction

During construction the Contractor shall walk the site and inspect storm water and erosion control measures at least once every 7 days and following any storm event of 0.5 inches or greater. Items the contractor shall inspect are:

- Silt Fence
  - Depth of sediment (sediment shall be removed from silt fence when it has reached 1/3 the height of the silt fence)
  - Tears in fabric
  - Fabric secured to fence posts
  - Fence posts firmly in ground

- Reseeding / Straw Mulching
  - Bare spots, washouts, and healthy growth
  - Clogs
  - Sediment buildup

- Grassy Infiltration Areas (GIA)
  - Check for sediment build up. If sediment depth exceeds 10% of GIA depth (0.5"), excavate sediment and re-seed GIA bottom.

If maintenance is found to be necessary, the contractor shall begin repairs within 24 hours.

After Final Stabilization

Upon completion of construction and final stabilization, the Owner shall take responsibility for operation and maintenance of the storm water management and erosion control system as well as the funding for the continued maintenance of this system. After final stabilization, the storm water management and erosion control system shall be inspected at least every six months. The items that shall be inspected are:

- Grassy Infiltration Areas (GIA)
  - Check for sediment build up. If sediment depth exceeds 10% of GIA depth (0.5"), excavate sediment and re-seed GIA bottom.

- Reseeded Areas
  - Bare spots, washouts, and healthy vegetation growth

IMPLEMENTATION SCHEDULE

The proposed construction schedule is as follows:

Summer and Fall 2018

- Install temporary erosion control prior to site disturbance
- Clear & grub building site
- Construct Improvements and GIA
- Finish Grade
- Hydroseed or broadcast seed and mulch disturbed areas

Spring 2019

- Check re-vegetated areas for bare spots, washouts, etc.
- Repair and reseed as necessary
- Remove temporary erosion control
- Final stabilization complete

SUMMARY

With the proper implementation of the best management practices listed above and the recommendations listed in this report, the subject property is capable of supporting the proposed building construction without substantial risk of soil erosion or sedimentation of surface waters. The site is capable of detaining and treating storm water runoff in accordance with the City of Ponderay requirements.

APPENDIX A

Area Classification Map, Rainfall Intensity Diagram, Runoff Coefficients

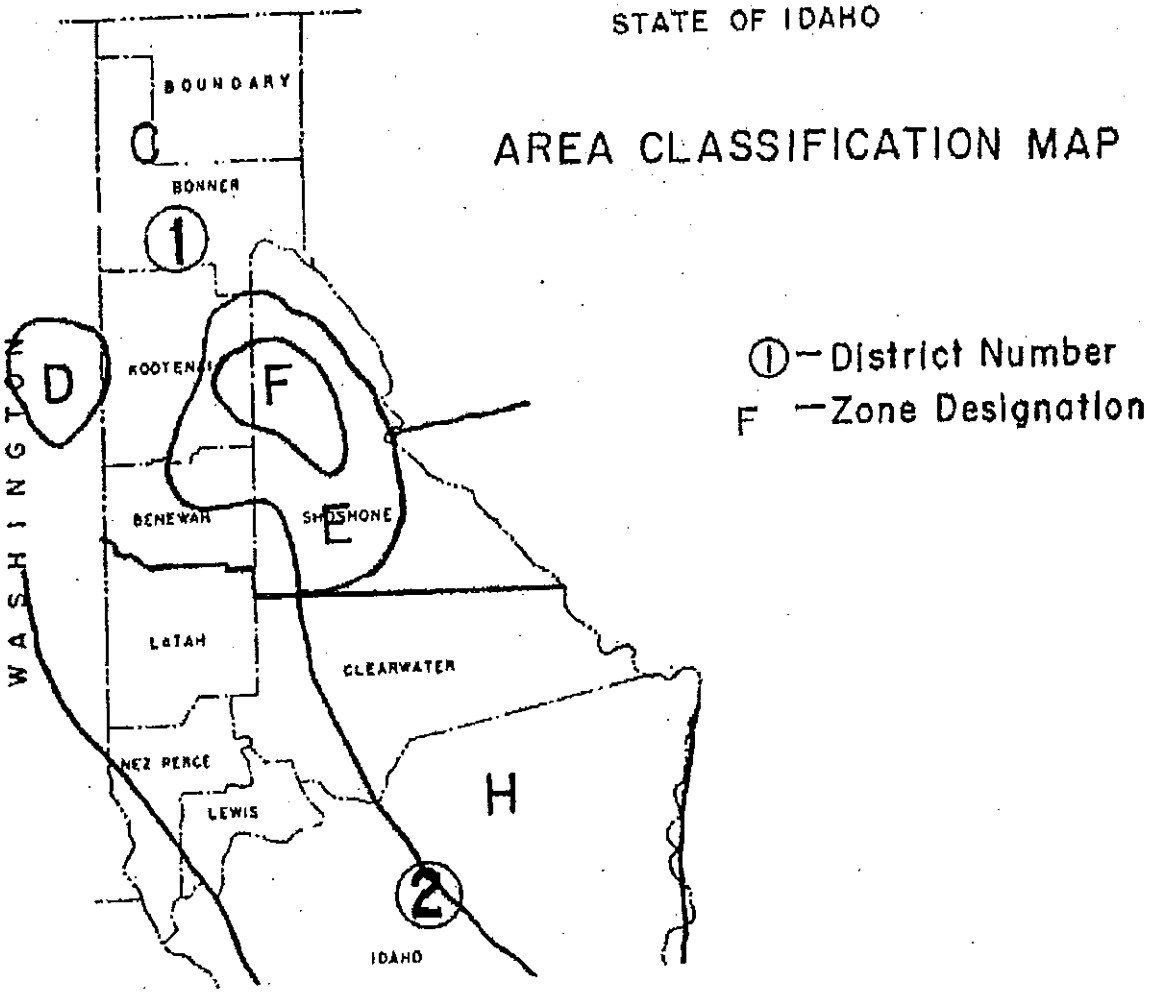


FIGURE 6-3 AREA CLASSIFICATION MAP FOR IDF CURVES - IDAHO
(IDAHO TRANSPORTATION DEPARTMENT)

FIGURE 6-4 ZONE C, INTENSITY-DURATION-FREQUENCY CURVE
(IDAHO TRANSPORTATION DEPARTMENT)

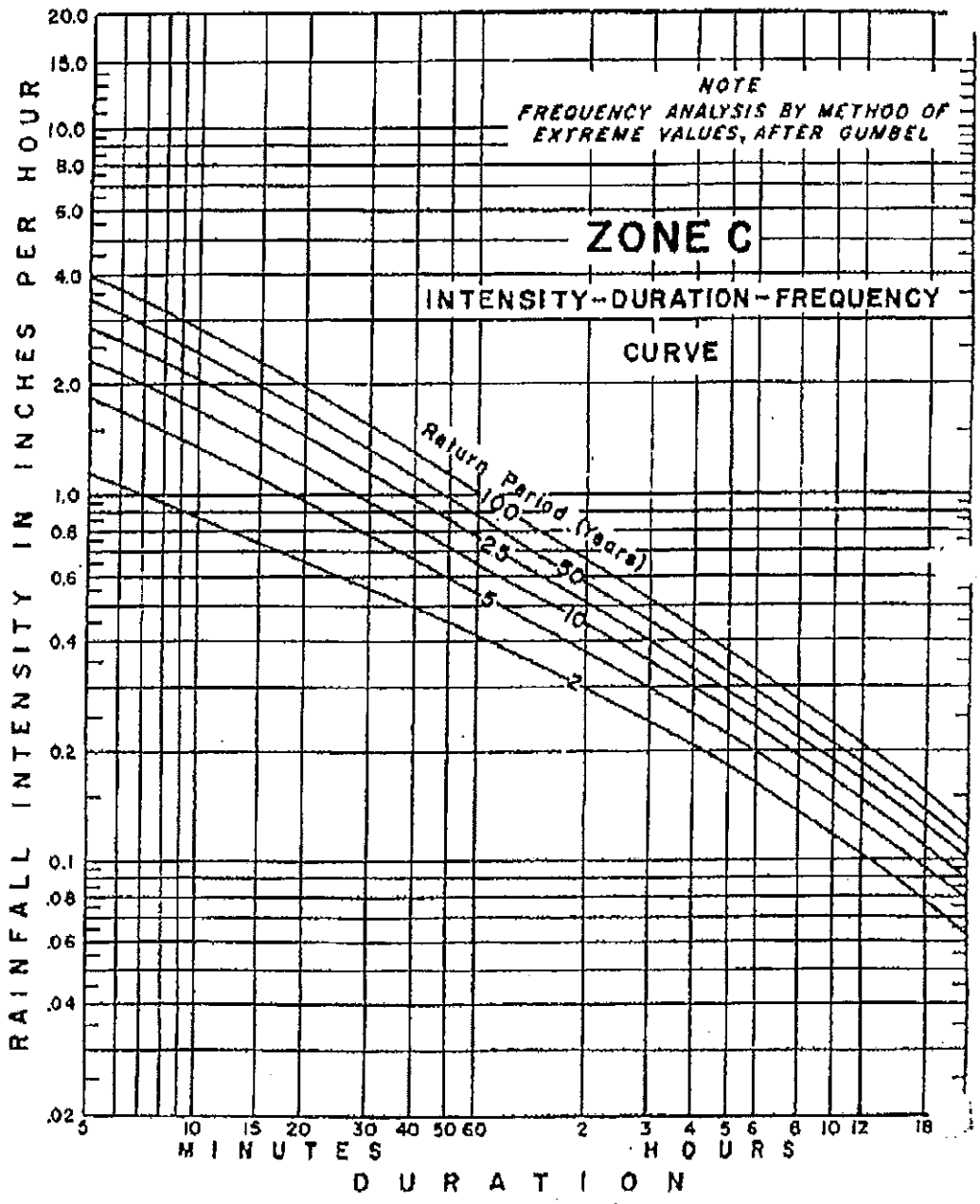


Table 1A.2. Values of Runoff Coefficient (C) for Rational Formula

Land Use	Description	Hydrologic Soils Group			
		A	B	C	D
Cultivated Land	Without conservation treatment	0.49	0.67	0.81	0.88
	With conservation treatment	0.27	0.43	0.67	0.67
Pasture or Range Land	Poor condition	0.38	0.63	0.78	0.84
	Good condition	---	0.25	0.51	0.65
Meadow	Good condition	---	---	0.41	0.61
Wood or Forest Land	Thin stand, poor cover, no mulch	---	0.34	0.59	0.70
	Good cover	---	---	0.45	0.59
Open Space, Lawn, Park, Golf Course, or Cemetery	Good condition (grass cover on 75% or more)	---	0.25	0.51	0.65
	Fair condition (grass cover on 50% to 75%)	---	0.45	0.63	0.74
Commercial and Business Area	85% impervious	0.84	0.90	0.93	0.96
Industrial District	72% impervious	0.67	0.81	0.88	0.92
Residential Lot Average lot size (acres): 1/8 1/4 1/3 1/2 1.0	Average % of lot impervious: 65 38 30 25 20	 0.59 0.29 --- --- ---	 0.76 0.55 0.49 0.45 0.41	 0.86 0.70 0.67 0.65 0.63	 0.90 0.80 0.78 0.76 0.74
Paved Area	Parking lots, roofs, driveways, etc.	0.99	0.99	0.99	0.99
Street or Road	Paved with curbs and storm sewers	0.99	0.99	0.99	0.99
		0.57	0.76	0.84	0.88
	Gravel	0.49	0.69	0.80	0.84

Note: The designer must use judgment to select the appropriate C value within the range. Generally, larger areas with permeable soils, flat slopes, and dense vegetation should have the lowest C values. Smaller areas with dense soils, moderate to steep slopes, and sparse vegetation should assigned the highest C values.

APPENDIX B

Storm Water Calculations and BMP Sizing

Project: Pend Oreille Vet Center
Date: 4/23/2018
By: JPJ

STORM WATER CALCULATIONS - Entire Lot

C - Gravel Roadway (Soil Type (D):	0.84
C - Grass (Fair Condition) (Soil Type D)	0.74
C Impervious surface:	0.99
I, Rainfall intensity (25-yr/24hr) (in/hr):	0.11
Infiltration Rate	0.6

	Existing		Proposed	
Areas	Acres	Sq. Ft	Acres	Sq. Ft
Total Area	0.778	33,890	0.778	33,890
Gravel Roadway Area	0.000	0	0.000	0
Building Area/Paved Driveway	0.000	0	0.223	9,710
Grassed Area	0.778	33,890	0.555	24,180
	Total	33,890	Total	33,890
	Comp. C	0.740	Comp. C	0.812

Time of Concentration (Tc)

$$T_c = \frac{0.007(nL)^{0.8}}{(P_2)^{0.5}S^{0.4}}$$

Pre Development

P2 =	1.8	2 yr, 24 hr storm (in)
L =	300	longest watershed length
n =	0.2	grass
S =	0.005	ft/ft (slope)
Tc =	**69.0**	**min**
use:	**75.0**	**min storm**

Post Development

P2 =	1.8	constant
L =	300	longest watershed length
n =	0.016	pavement
S =	0.005	ft/ft (slope)
Tc =	**9.1**	**min**
use:	**10.0**	**min storm**

Bowstring Method

	pre	post
Composite C =	0.740	0.812
Area (ac) =	0.778	0.778
Tc=	69.0	9.1

Max GIA Outflow Rate = **0.40** cfs = predevelopment 25-yr, 45-min. event
Weir Width (Bottom) = 0.667 ft

GIA area	**2,350**	sf	
GIA perimeter	675	ft	
GIA Volume	1,513		
GIA Design Depth	0.5	ft	
Max Depth	0.49	ft	OK
Max Flow Rate	0.38	cfs	OK

Time (min)	Elapsed Time (sec)	Intensity (in/hr)	Qin (cfs)	Vol in (cf)	Max GIA Depth (ft)	Max Qout (cfs)	Storage Req. (cf)
0	0	2.8	1.77				
5	300	**2.8**	1.77	711	0.29	0.10	677
7	420	2.5	1.58	888	0.35	0.16	813
10	600	2.1	1.33	1,043	0.39	0.22	923
15	900	1.7	1.07	1,166	0.42	0.26	986

20	1,200	1.5	0.95	1,313	0.45	0.31	1,059
25	1,500	1.35	0.85	1,438	0.47	0.35	1,109
30	1,800	1.2	0.76	1,505	0.48	0.36	1,123
35	2,100	1.1	0.69	1,588	0.49	0.38	1,142
40	2,400	0.97	0.61	1,584	0.48	0.36	1,118
45	2,700	0.92	0.58	1,677	0.48	0.38	1,138
50	3,000	0.87	0.55	1,751	0.49	0.38	1,146
55	3,300	0.81	0.51	1,783	0.48	0.37	1,137
60	3,600	0.75	0.47	1,793	0.48	0.36	1,119
75	4,500	0.7	0.44	2,072	0.49	0.38	1,146
120	7,200	0.51	0.32	2,379	0.45	0.31	1,055
180	10,800	0.4	0.25	2,775	0.45	0.31	1,055
240	14,400	0.34	0.21	3,132	0.39	0.21	912
300	18,000	0.29	0.18	3,330	0.36	0.18	857
360	21,600	0.28	0.18	3,852	0.36	0.18	845
420	25,200	0.26	0.16	4,168	0.35	0.16	820
480	28,800	0.25	0.16	4,576	0.34	0.16	808
540	32,400	0.23	0.15	4,733	0.33	0.15	782
600	36,000	0.22	0.14	5,027	0.33	0.14	768
660	39,600	0.2	0.13	5,025	0.31	0.13	739
720	43,200	0.19	0.12	5,205	0.31	0.12	724
780	46,800	0.185	0.12	5,489	0.31	0.12	717
840	50,400	0.18	0.11	5,750	0.30	0.11	709
900	54,000	0.17	0.11	5,817	0.29	0.11	693
960	57,600	0.165	0.10	6,021	0.29	0.10	685
1020	61,200	0.16	0.10	6,202	0.29	0.10	677
1080	64,800	0.15	0.09	6,155	0.28	0.09	660
1140	68,400	0.145	0.09	6,280	0.28	0.09	651
1200	72,000	0.14	0.09	6,382	0.27	0.09	642
1260	75,600	0.13	0.08	6,221	0.27	0.08	623
1320	79,200	0.125	0.08	6,266	0.26	0.08	613
1380	82,800	0.12	0.08	6,288	0.05	0.08	604
1440	86,400	0.11	0.07	6,014	0.25	0.07	583

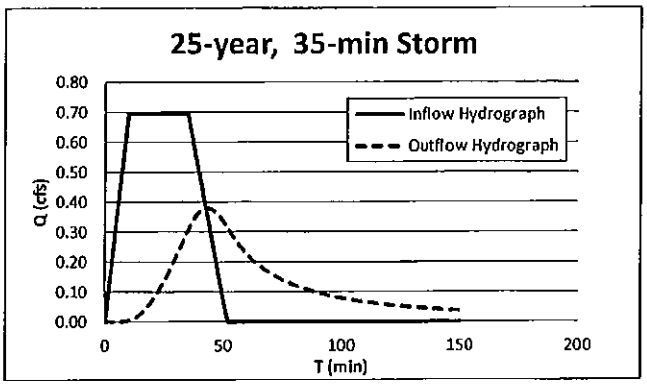
25 YEAR 35 MIN STORM

Flow Balance Table

INFLOW HYDROGRAPH

T	35	min
	2100	sec
Qp	0.69	cfs

Tc	10	min
Total Length	3102	sec
Foreslope	0.0012	
Backslope	0.0007	
GIA Area	2,350	sf
GIA Perimeter	675	ft
Design Depth	0.5	ft



MAX Q
0.379

Total Vol	MAX DEPTH
1,142	0.49

Time (min)	Time (sec)	Qt	Vt (cf)	Initial Depth (ft)	D (ft)	Avg. D (ft)	Avg. Qout (cfs)	Vout (cf)	ΔV	GIA Depth Depth Final (ft)
0	0	0.00	0	0.00	0.000	0.000	0.00	0	0	0.00
1	60	0.07	2	0.00	0.001	0.000	0.00	0	2	0.00
2	120	0.14	6	0.001	0.004	0.002	0.00	0	6	0.00
3	180	0.21	10	0.004	0.008	0.006	0.00	0	10	0.01
4	240	0.28	15	0.008	0.014	0.011	0.00	0	15	0.01
5	300	0.35	19	0.014	0.022	0.018	0.00	0	19	0.02
6	360	0.42	23	0.022	0.032	0.027	0.00	0	23	0.03
7	420	0.49	27	0.032	0.043	0.038	0.00	0	27	0.04
8	480	0.56	31	0.043	0.057	0.050	0.00	0	31	0.06
9	540	0.63	35	0.057	0.072	0.064	0.00	0	35	0.07
10	600	0.69	40	0.072	0.088	0.080	0.00	0	39	0.09
11	660	0.69	42	0.088	0.106	0.097	0.01	0	41	0.11
12	720	0.69	42	0.106	0.124	0.115	0.01	1	41	0.12
13	780	0.69	42	0.123	0.141	0.132	0.01	1	41	0.14
14	840	0.69	42	0.141	0.159	0.150	0.02	1	41	0.16
15	900	0.69	42	0.158	0.176	0.167	0.03	2	40	0.18
16	960	0.69	42	0.175	0.193	0.184	0.03	2	40	0.19
17	1020	0.69	42	0.192	0.210	0.201	0.04	2	39	0.21
18	1080	0.69	42	0.209	0.226	0.218	0.05	3	39	0.23
19	1140	0.69	42	0.225	0.243	0.234	0.06	4	38	0.24
20	1200	0.69	42	0.241	0.259	0.250	0.07	4	37	0.26
21	1260	0.69	42	0.257	0.275	0.266	0.08	5	37	0.27
22	1320	0.69	42	0.273	0.291	0.282	0.09	6	36	0.29
23	1380	0.69	42	0.288	0.306	0.297	0.11	6	35	0.30
24	1440	0.69	42	0.303	0.321	0.312	0.12	7	34	0.32
25	1500	0.69	42	0.318	0.336	0.327	0.14	8	33	0.33
26	1560	0.69	42	0.332	0.350	0.341	0.15	9	33	0.35
27	1620	0.69	42	0.346	0.364	0.355	0.17	10	32	0.36
28	1680	0.69	42	0.359	0.377	0.368	0.18	11	31	0.37
29	1740	0.69	42	0.372	0.390	0.381	0.20	12	30	0.39
30	1800	0.69	42	0.385	0.403	0.394	0.22	13	29	0.40
31	1860	0.69	42	0.397	0.415	0.406	0.24	14	28	0.41
32	1920	0.69	42	0.409	0.427	0.418	0.25	15	26	0.42
33	1980	0.69	42	0.420	0.438	0.429	0.27	16	25	0.43
34	2040	0.69	42	0.431	0.449	0.440	0.29	17	24	0.44
35	2100	0.69	42	0.441	0.459	0.450	0.31	18	23	0.45
36	2160	0.65	40	0.451	0.468	0.460	0.32	19	21	0.46
37	2220	0.61	38	0.460	0.476	0.468	0.34	20	18	0.47
38	2280	0.57	35	0.468	0.483	0.475	0.35	21	14	0.47
39	2340	0.53	33	0.474	0.488	0.481	0.36	22	11	0.48
40	2400	0.49	30	0.479	0.492	0.485	0.37	22	8	0.48
41	2460	0.45	28	0.482	0.494	0.488	0.37	22	6	0.48
42	2520	0.40	25	0.485	0.496	0.490	0.38	23	3	0.49
43	2580	0.36	23	0.486	0.496	0.491	0.38	23	0	0.49

25 YEAR 35 MIN STORM

44	2640	0.32	20	0.486	0.495	0.490	0.38	23	-2	0.49
45	2700	0.28	18	0.485	0.493	0.489	0.38	23	-5	0.48
46	2760	0.24	15	0.483	0.490	0.486	0.37	22	-7	0.48
47	2820	0.20	13	0.480	0.486	0.483	0.36	22	-9	0.48
48	2880	0.15	10	0.476	0.481	0.479	0.36	21	-11	0.47
49	2940	0.11	8	0.472	0.475	0.474	0.35	21	-13	0.47
50	3000	0.07	5	0.466	0.469	0.468	0.34	20	-15	0.46
51	3060	0.03	3	0.460	0.461	0.461	0.32	19	-16	0.45
52	3120	0.00	1	0.453	0.454	0.453	0.31	19	-18	0.45
53	3180	0.00	0	0.446	0.446	0.446	0.30	18	-18	0.44
54	3240	0.00	0	0.438	0.438	0.438	0.29	17	-17	0.43
55	3300	0.00	0	0.431	0.431	0.431	0.27	16	-16	0.42
56	3360	0.00	0	0.424	0.424	0.424	0.26	16	-16	0.42
57	3420	0.00	0	0.417	0.417	0.417	0.25	15	-15	0.41
58	3480	0.00	0	0.411	0.411	0.411	0.24	15	-15	0.40
59	3540	0.00	0	0.404	0.404	0.404	0.23	14	-14	0.40
60	3600	0.00	0	0.398	0.398	0.398	0.23	14	-14	0.39
61	3660	0.00	0	0.393	0.393	0.393	0.22	13	-13	0.39
62	3720	0.00	0	0.387	0.387	0.387	0.21	13	-13	0.38
63	3780	0.00	0	0.382	0.382	0.382	0.20	12	-12	0.38
64	3840	0.00	0	0.377	0.377	0.377	0.20	12	-12	0.37
65	3900	0.00	0	0.372	0.372	0.372	0.19	11	-11	0.37
66	3960	0.00	0	0.367	0.367	0.367	0.18	11	-11	0.36
67	4020	0.00	0	0.362	0.362	0.362	0.18	11	-11	0.36
68	4080	0.00	0	0.358	0.358	0.358	0.17	10	-10	0.35
69	4140	0.00	0	0.353	0.353	0.353	0.17	10	-10	0.35
70	4200	0.00	0	0.349	0.349	0.349	0.16	10	-10	0.34
71	4260	0.00	0	0.345	0.345	0.345	0.16	9	-9	0.34
72	4320	0.00	0	0.341	0.341	0.341	0.15	9	-9	0.34
73	4380	0.00	0	0.337	0.337	0.337	0.15	9	-9	0.33
74	4440	0.00	0	0.333	0.333	0.333	0.14	9	-9	0.33
75	4500	0.00	0	0.330	0.330	0.330	0.14	8	-8	0.33
76	4560	0.00	0	0.326	0.326	0.326	0.14	8	-8	0.32
77	4620	0.00	0	0.322	0.322	0.322	0.13	8	-8	0.32
78	4680	0.00	0	0.319	0.319	0.319	0.13	8	-8	0.32
79	4740	0.00	0	0.316	0.316	0.316	0.13	8	-8	0.31
80	4800	0.00	0	0.313	0.313	0.313	0.12	7	-7	0.31
81	4860	0.00	0	0.309	0.309	0.309	0.12	7	-7	0.31
82	4920	0.00	0	0.306	0.306	0.306	0.12	7	-7	0.30
83	4980	0.00	0	0.303	0.303	0.303	0.11	7	-7	0.30
84	5040	0.00	0	0.301	0.301	0.301	0.11	7	-7	0.30
85	5100	0.00	0	0.298	0.298	0.298	0.11	7	-7	0.29
86	5160	0.00	0	0.295	0.295	0.295	0.11	6	-6	0.29
87	5220	0.00	0	0.292	0.292	0.292	0.10	6	-6	0.29
88	5280	0.00	0	0.290	0.290	0.290	0.10	6	-6	0.29
89	5340	0.00	0	0.287	0.287	0.287	0.10	6	-6	0.28
90	5400	0.00	0	0.284	0.284	0.284	0.10	6	-6	0.28
91	5460	0.00	0	0.282	0.282	0.282	0.09	6	-6	0.28
92	5520	0.00	0	0.280	0.280	0.280	0.09	6	-6	0.28
93	5580	0.00	0	0.277	0.277	0.277	0.09	5	-5	0.27
94	5640	0.00	0	0.275	0.275	0.275	0.09	5	-5	0.27
95	5700	0.00	0	0.273	0.273	0.273	0.09	5	-5	0.27
96	5760	0.00	0	0.270	0.270	0.270	0.09	5	-5	0.27
97	5820	0.00	0	0.268	0.268	0.268	0.08	5	-5	0.27
98	5880	0.00	0	0.266	0.266	0.266	0.08	5	-5	0.26
99	5940	0.00	0	0.264	0.264	0.264	0.08	5	-5	0.26
100	6000	0.00	0	0.262	0.262	0.262	0.08	5	-5	0.26
101	6060	0.00	0	0.260	0.260	0.260	0.08	5	-5	0.26
102	6120	0.00	0	0.258	0.258	0.258	0.08	5	-5	0.26
103	6180	0.00	0	0.256	0.256	0.256	0.07	4	-4	0.25
104	6240	0.00	0	0.254	0.254	0.254	0.07	4	-4	0.25
105	6300	0.00	0	0.252	0.252	0.252	0.07	4	-4	0.25

25 YEAR 35 MIN STORM

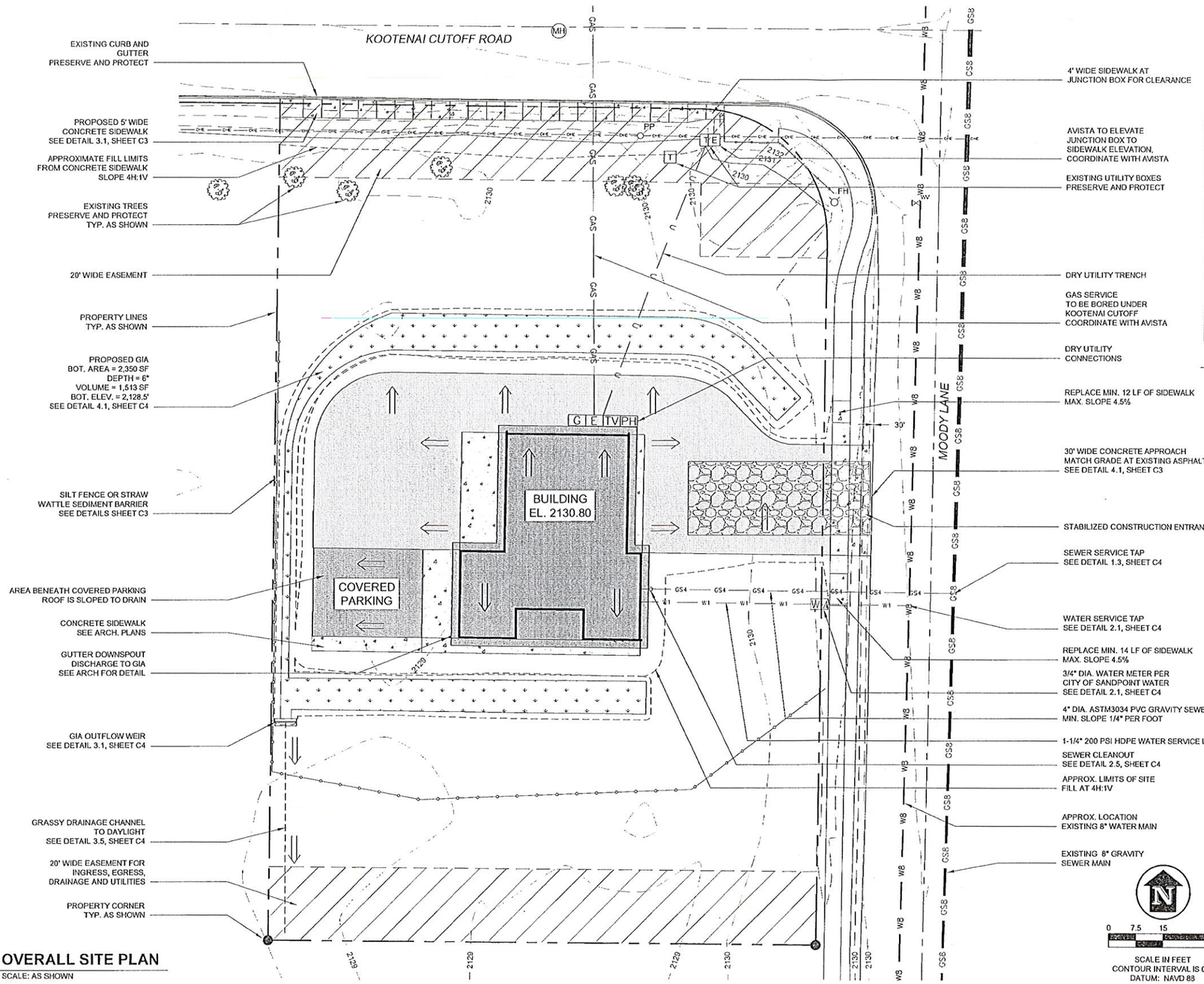
106	6360	0.00	0	0.250	0.250	0.250	0.07	4	-4	0.25
107	6420	0.00	0	0.249	0.249	0.249	0.07	4	-4	0.25
108	6480	0.00	0	0.247	0.247	0.247	0.07	4	-4	0.25
109	6540	0.00	0	0.245	0.245	0.245	0.07	4	-4	0.24
110	6600	0.00	0	0.243	0.243	0.243	0.07	4	-4	0.24
111	6660	0.00	0	0.242	0.242	0.242	0.06	4	-4	0.24
112	6720	0.00	0	0.240	0.240	0.240	0.06	4	-4	0.24
113	6780	0.00	0	0.238	0.238	0.238	0.06	4	-4	0.24
114	6840	0.00	0	0.237	0.237	0.237	0.06	4	-4	0.24
115	6900	0.00	0	0.235	0.235	0.235	0.06	4	-4	0.23
116	6960	0.00	0	0.234	0.234	0.234	0.06	4	-4	0.23
117	7020	0.00	0	0.232	0.232	0.232	0.06	4	-4	0.23
118	7080	0.00	0	0.231	0.231	0.231	0.06	3	-3	0.23
119	7140	0.00	0	0.229	0.229	0.229	0.06	3	-3	0.23
120	7200	0.00	0	0.228	0.228	0.228	0.06	3	-3	0.23
121	7260	0.00	0	0.226	0.226	0.226	0.05	3	-3	0.23
122	7320	0.00	0	0.225	0.225	0.225	0.05	3	-3	0.22
123	7380	0.00	0	0.224	0.224	0.224	0.05	3	-3	0.22
124	7440	0.00	0	0.222	0.222	0.222	0.05	3	-3	0.22
125	7500	0.00	0	0.221	0.221	0.221	0.05	3	-3	0.22
126	7560	0.00	0	0.220	0.220	0.220	0.05	3	-3	0.22
127	7620	0.00	0	0.218	0.218	0.218	0.05	3	-3	0.22
128	7680	0.00	0	0.217	0.217	0.217	0.05	3	-3	0.22
129	7740	0.00	0	0.216	0.216	0.216	0.05	3	-3	0.21
130	7800	0.00	0	0.215	0.215	0.215	0.05	3	-3	0.21
131	7860	0.00	0	0.213	0.213	0.213	0.05	3	-3	0.21
132	7920	0.00	0	0.212	0.212	0.212	0.05	3	-3	0.21
133	7980	0.00	0	0.211	0.211	0.211	0.05	3	-3	0.21
134	8040	0.00	0	0.210	0.210	0.210	0.05	3	-3	0.21
135	8100	0.00	0	0.209	0.209	0.209	0.04	3	-3	0.21
136	8160	0.00	0	0.207	0.207	0.207	0.04	3	-3	0.21
137	8220	0.00	0	0.206	0.206	0.206	0.04	3	-3	0.21
138	8280	0.00	0	0.205	0.205	0.205	0.04	3	-3	0.20
139	8340	0.00	0	0.204	0.204	0.204	0.04	3	-3	0.20
140	8400	0.00	0	0.203	0.203	0.203	0.04	3	-3	0.20
141	8460	0.00	0	0.202	0.202	0.202	0.04	2	-2	0.20
142	8520	0.00	0	0.201	0.201	0.201	0.04	2	-2	0.20
143	8580	0.00	0	0.200	0.200	0.200	0.04	2	-2	0.20
144	8640	0.00	0	0.199	0.199	0.199	0.04	2	-2	0.20
145	8700	0.00	0	0.198	0.198	0.198	0.04	2	-2	0.20
146	8760	0.00	0	0.197	0.197	0.197	0.04	2	-2	0.20
147	8820	0.00	0	0.196	0.196	0.196	0.04	2	-2	0.19
148	8880	0.00	0	0.195	0.195	0.195	0.04	2	-2	0.19
149	8940	0.00	0	0.194	0.194	0.194	0.04	2	-2	0.19
150	9000	0.00	0	0.193	0.193	0.193	0.04	2	-2	0.19
151	9060	0.00	0	0.192	0.192	0.192	0.04	2	-2	0.19
152	9120	0.00	0	0.191	0.191	0.191	0.04	2	-2	0.19
153	9180	0.00	0	0.190	0.190	0.190	0.04	2	-2	0.19
154	9240	0.00	0	0.189	0.189	0.189	0.04	2	-2	0.19
155	9300	0.00	0	0.188	0.188	0.188	0.03	2	-2	0.19
156	9360	0.00	0	0.188	0.188	0.188	0.03	2	-2	0.19
157	9420	0.00	0	0.187	0.187	0.187	0.03	2	-2	0.19
158	9480	0.00	0	0.186	0.186	0.186	0.03	2	-2	0.18
159	9540	0.00	0	0.185	0.185	0.185	0.03	2	-2	0.18
160	9600	0.00	0	0.184	0.184	0.184	0.03	2	-2	0.18
161	9660	0.00	0	0.183	0.183	0.183	0.03	2	-2	0.18
162	9720	0.00	0	0.182	0.182	0.182	0.03	2	-2	0.18
163	9780	0.00	0	0.182	0.182	0.182	0.03	2	-2	0.18
164	9840	0.00	0	0.181	0.181	0.181	0.03	2	-2	0.18
165	9900	0.00	0	0.180	0.180	0.180	0.03	2	-2	0.18
166	9960	0.00	0	0.179	0.179	0.179	0.03	2	-2	0.18
167	10020	0.00	0	0.178	0.178	0.178	0.03	2	-2	0.18

25 YEAR 35 MIN STORM

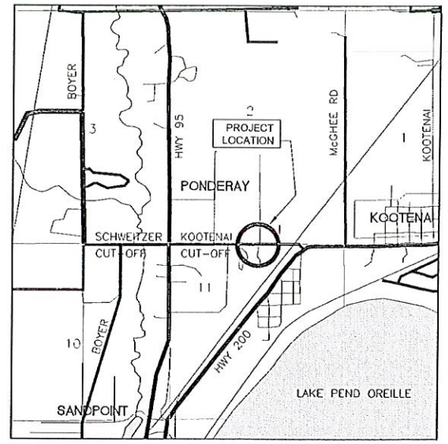
168	10080	0.00	0	0.178	0.178	0.178	0.03	2	-2	0.18
169	10140	0.00	0	0.177	0.177	0.177	0.03	2	-2	0.18
170	10200	0.00	0	0.176	0.176	0.176	0.03	2	-2	0.18
171	10260	0.00	0	0.175	0.175	0.175	0.03	2	-2	0.17
172	10320	0.00	0	0.175	0.175	0.175	0.03	2	-2	0.17
173	10380	0.00	0	0.174	0.174	0.174	0.03	2	-2	0.17
174	10440	0.00	0	0.173	0.173	0.173	0.03	2	-2	0.17
175	10500	0.00	0	0.173	0.173	0.173	0.03	2	-2	0.17
176	10560	0.00	0	0.172	0.172	0.172	0.03	2	-2	0.17
177	10620	0.00	0	0.171	0.171	0.171	0.03	2	-2	0.17
178	10680	0.00	0	0.170	0.170	0.170	0.03	2	-2	0.17
179	10740	0.00	0	0.170	0.170	0.170	0.03	2	-2	0.17
180	10800	0.00	0	0.169	0.169	0.169	0.03	2	-2	0.17
181	10860	0.00	0	0.168	0.168	0.168	0.03	2	-2	0.17
182	10920	0.00	0	0.168	0.168	0.168	0.03	2	-2	0.17
183	10980	0.00	0	0.167	0.167	0.167	0.03	2	-2	0.17
184	11040	0.00	0	0.166	0.166	0.166	0.03	2	-2	0.17
185	11100	0.00	0	0.166	0.166	0.166	0.03	2	-2	0.17
186	11160	0.00	0	0.165	0.165	0.165	0.02	1	-1	0.16
187	11220	0.00	0	0.164	0.164	0.164	0.02	1	-1	0.16
188	11280	0.00	0	0.164	0.164	0.164	0.02	1	-1	0.16
189	11340	0.00	0	0.163	0.163	0.163	0.02	1	-1	0.16
190	11400	0.00	0	0.163	0.163	0.163	0.02	1	-1	0.16
191	11460	0.00	0	0.162	0.162	0.162	0.02	1	-1	0.16
192	11520	0.00	0	0.161	0.161	0.161	0.02	1	-1	0.16
193	11580	0.00	0	0.161	0.161	0.161	0.02	1	-1	0.16
194	11640	0.00	0	0.160	0.160	0.160	0.02	1	-1	0.16
195	11700	0.00	0	0.160	0.160	0.160	0.02	1	-1	0.16
196	11760	0.00	0	0.159	0.159	0.159	0.02	1	-1	0.16
197	11820	0.00	0	0.158	0.158	0.158	0.02	1	-1	0.16
198	11880	0.00	0	0.158	0.158	0.158	0.02	1	-1	0.16
199	11940	0.00	0	0.157	0.157	0.157	0.02	1	-1	0.16
200	12000	0.00	0	0.157	0.157	0.157	0.02	1	-1	0.16
201	12060	0.00	0	0.156	0.156	0.156	0.02	1	-1	0.16
202	12120	0.00	0	0.156	0.156	0.156	0.02	1	-1	0.16
203	12180	0.00	0	0.155	0.155	0.155	0.02	1	-1	0.15
204	12240	0.00	0	0.155	0.155	0.155	0.02	1	-1	0.15
205	12300	0.00	0	0.154	0.154	0.154	0.02	1	-1	0.15
206	12360	0.00	0	0.153	0.153	0.153	0.02	1	-1	0.15
207	12420	0.00	0	0.153	0.153	0.153	0.02	1	-1	0.15
208	12480	0.00	0	0.152	0.152	0.152	0.02	1	-1	0.15
209	12540	0.00	0	0.152	0.152	0.152	0.02	1	-1	0.15
210	12600	0.00	0	0.151	0.151	0.151	0.02	1	-1	0.15

BONNER COUNTY EMS STATION - KOOTENAI CUTOFF RD
STORMWATER, GRADING, EROSION CONTROL & UTILITY SITE PLAN

KOOTENAI CUTOFF ROAD, LOT 2, B&L COMMERCIAL PARK, SECTION 11, T 57 N, R 2 W, BOISE MERIDIAN, BONNER COUNTY, IDAHO



4.1 **OVERALL SITE PLAN**
SCALE: AS SHOWN



VICINITY MAP
NOT TO SCALE

NOTES:
1. SURVEY INFORMATION INCLUDING TOPOGRAPHIC INFORMATION HAS BEEN PROVIDED BY H2A ARCHITECTS VIA GLAHE AND ASSOCIATES. JAS IS NOT RESPONSIBLE FOR ANY POSSIBLE INACCURACIES IN THE SURVEY INFORMATION PROVIDED.
2. CONTRACTOR TO VERIFY GRADES PRIOR TO CONSTRUCTION.
3. BUILDING CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF BUILDING ELEVATIONS BASED ON FOUNDATION TYPE.
4. ALL EXISTING VEGETATION SHALL BE MAINTAINED EXCEPT THAT REQUIRED FOR REMOVAL FOR CONSTRUCTION PURPOSES.
5. CLEARED AND GRUBBED TOPSOIL SHALL BE STOCKPILED AND STORED AND SPREAD AS A COVERING OVER FILLED SLOPES AT THE END OF CONSTRUCTION.
6. INSTALL SEDIMENT BARRIERS DOWNSLOPE OF ALL DISTURBED SOIL AREAS.
7. DURING CONSTRUCTION ALL DISTURBED SOIL AREAS SHALL BE STRAW MULCHED AS SOON AS POSSIBLE TO PREVENT SEDIMENT MIGRATION.
8. ALL DISTURBED SOIL AREAS SHALL BE RESEEDED WITH NATIVE VEGETATION.
9. PROTECT ALL DOWNSTREAM GIA DISCHARGES FROM EROSION PER DETAIL 3.1, SHEET C4.
10. COORDINATE ALL UTILITY INSTALLATION WITH THE INDIVIDUAL PROVIDERS, UTILITY PROVIDERS SHALL DETERMINE THE ACTUAL LOCATIONS OF ALL UTILITIES.
11. DURING CONSTRUCTION, A STABILIZED CONSTRUCTION ENTRANCE SHALL BE PROVIDED AT THE ENTRANCE TO THE SITE. ENTRANCE SHALL CONSIST OF 3" MINUS CAP-ROCK FOR A MINIMUM TRAVEL LENGTH OF 50'.
12. CONTRACTOR SHALL INSPECT AND CLEAN STREET ON A DAILY BASIS TO PREVENT SEDIMENT MIGRATION AND TRANSPORT FROM THE SITE.

SP18-044
RECEIVED
MAY 07 2018
PLANNING OFFICE
CITY OF PONDERAY

CALL
2 WORKING DAYS
BEFORE YOU DIG!
Bonner Boundary One Call
811

PROFESSIONAL ENGINEER LICENSED 14031 STATE OF IDAHO JEFF JENSEN
05-03-18

No.	DATE:	REVISION	DR/CHK

James A. Sewell and Associates, LLC
1319 NORTH DIVISION AVENUE
SANDPOINT, IDAHO 83864
(208) 263-4160

SHEET TITLE: OVERALL SITE PLAN AND VICINITY MAP
PROJECT: BONNER COUNTY EMS STATION STORMWATER, GRADING, EROSION, UTILITIES PONDERAY, BONNER COUNTY, IDAHO

DATE:	05-03-2018
SCALE:	AS SHOWN
DESIGNED:	JPJ/JFQ
DRAWN:	JFQ
CHECKED:	TCB
PROJ NO.:	08259-18-001
CAD FILE:	E-BONNER EMS
SHEET	C1

PROPERTY LINES
TYP. AS SHOWN

SILT FENCE OR STRAW
WATTLE SEDIMENT BARRIER
SEE DETAILS SHEET C3

PROPOSED GIA
BOT. AREA = 2,350 SF
DEPTH = 6"
VOLUME = 1,513 SF
BOT. ELEV. = 2,128.5'
SEE DETAIL 4.1, SHEET C4

DRY UTILITY TRENCH

GAS SERVICE
TO BE BORED UNDER
KOOTENAI CUTOFF
COORDINATE WITH AVISTA

DRY UTILITY
CONNECTIONS

REPLACE MIN. 12'
OF SIDEWALK
MAX. SLOPE 4.5%

79'
10'
23'
18'
9'
2'
74'
97'

GAS
G E TV PH

FG 2130.32 | FG 2130.32 | FG 2130.32 | FG 2130.14 | FG 2129.82 | FG 2129.75
FG 2130.17
FG 2130.02
FG 2130.60 | FG 2130.80
FG 2130.09 | ESW 2130.62 | ESW 2130.70 | FG 2130.81
FG 2130.02 | FG 2130.47 | FG 2130.80 | FG 2130.62 | FG 2130.80
FG 2130.27 | FG 2130.08 | FG 2130.14 | ESW 2130.62 | ESW 2130.70 | FG 2130.81
ESW 2130.00 | ESW 2130.50 | FG 2130.62 | FG 2130.60 | FG 2130.80 | FG 2130.62
ESW 2130.00 | ESW 2130.42 | ESW 2130.54 | ESW 2130.72 | FG 2130.72 | FG 2130.54

-1.3% | -3.0% | -3.0% | -2.0% | -2.9% | -1.5% | -4.3% | -1.8% | -2.5% | -1.0% | -2.0% | -2.8%

6" THICK
CONCRETE
APRON

BUILDING
EL. 2130.80

PROPOSED
PARKING LOT

6" THICK
CONCRETE
APRON

AREA BENEATH
COVERED PARKING ROOF
IS SLOPED TO DRAIN

COVERED
PARKING

CONCRETE
APRON

CONCRETE SIDEWALK
SEE ARCH. PLANS

2129

GIA OUTFLOW WEIR
SEE DETAIL 3.1, SHEET C4

GRASSY DRAINAGE CHANNEL
TO DAYLIGHT
SEE DETAIL 3.5, SHEET C4

GUTTER DOWNSPOUT
DISCHARGE TO GIA
SEE ARCH FOR DETAIL

GIA LIMITS AT 2H:1V CUT SLOPE
RECOMMEND 4H:1V CUT SLOPE
WHERE POSSIBLE

REPLACE MIN. 14' OF SIDEWALK
MAX. SLOPE 4.5%

GS4 | W1 | WM

1-1/4" 200 PSI HDPE WATER SERVICE LINE
4" DIA. ASTM3034 PVC GRAVITY SEWER SERVICE
MIN. SLOPE 1/4" PER FOOT

3/4" DIA. WATER METER PER
CITY OF SANDPOINT WATER
SEE DETAIL 2.1, SHEET C4

EXISTING SIDEWALK
PRESERVE AND PROTECT
WHERE NOT AFFECTED
BY APPROACH

SEWER CLEANOUT
SEE DETAIL 2.5, SHEET C4

APPROX. LIMITS OF FILL AT 4H:1V

30' WIDE CONCRETE APPROACH
MATCH GRADE AT EXISTING ASPHALT
SEE DETAIL 4.1, SHEET C3

MOODY LANE

W8 | GS8

SEWER SERVICE TAP
SEE DETAIL 1.3, SHEET C4

WATER SERVICE TAP
SEE DETAIL 2.1, SHEET C4

APPROX. LOCATION
EXISTING 8" WATER MAIN

EXISTING 8" GRAVITY
SEWER MAIN

N

0 | 7.5 | 15

SCALE IN FEET
CONTOUR INTERVAL IS 0.5'
DATUM: NAVD 88

4.1 GRADING PLAN
SCALE: AS SHOWN

BR-18-044
RECEIVED
MAY 07 2018
PLANNING OFFICE
CITY OF PONDERAY

PROFESSIONAL ENGINEER
LICENSED
4031
STATE OF IDAHO
JEFF JENSEN
05-03-18

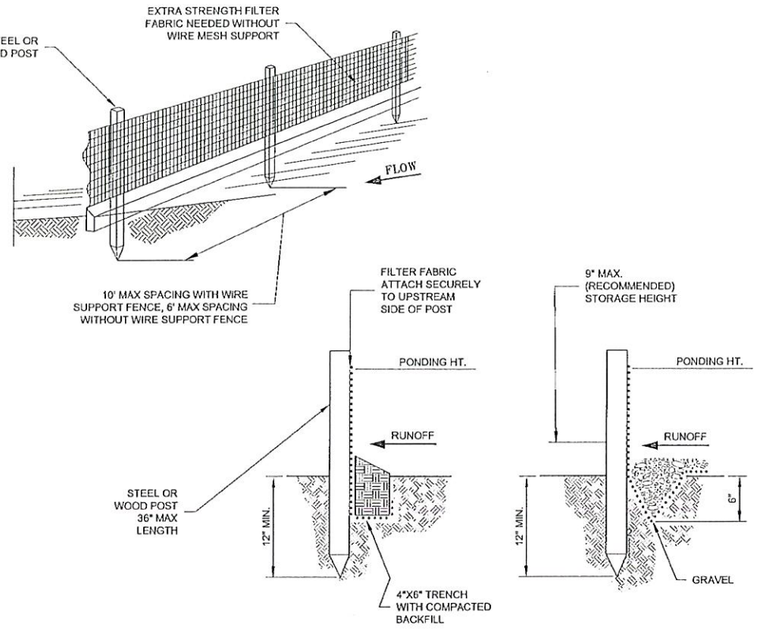
No.	DATE:	REVISION	DR/CHK

James A. Sewell and Associates, LLC
1319 NORTH DIVISION AVENUE
SANDPOINT, IDAHO 83864
(208) 263-4160

SHEET TITLE: DETAILED GRADING PLAN

PROJECT: BONNER COUNTY EMS STATION
STORMWATER, GRADING, EROSION, UTILITIES
PONDERAY, BONNER COUNTY, IDAHO

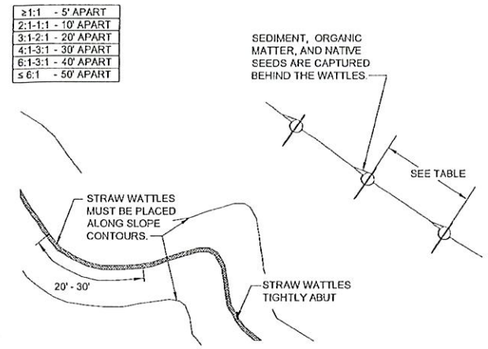
DATE:	05-03-2018
SCALE:	AS SHOWN
DES.GNED:	JPJ/JFQ
DRAWN:	JFQ
CHECKED:	TCB
PROJ.NO:	08259-18-001
CAD FILE:	E-BONNER EMS
SHEET	C2



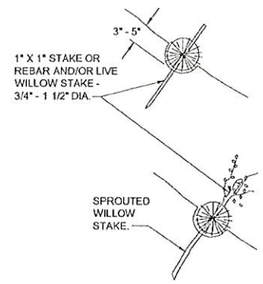
2.1 SILT FENCE
SCALE: NOT TO SCALE

NOTES:
1. STRAW WATTLES ARE TUBES MADE FROM STRAW BOUND W/ PLASTIC NETTING. THEY ARE APPROX. 9" DIA. AND 20 - 30 FT. LONG.
2. STRAW WATTLES TRAP SEDIMENT AND REDUCE SHEET & RILL EROSION BY REDUCING SLOPE GRADIENT, INCREASING INFILTRATION RATES AND BY PRODUCING A FAVORABLE ENVIRONMENT FOR PLANT ESTABLISHMENT.
3. STRAW WATTLE INSTALLATION REQUIRES THE PLACEMENT AND SECURE STAKING OF THE WATTLE IN A TRENCH, 3" - 5" DEEP, DUG ON CONTOUR. RUNOFF MUST NOT BE ALLOWED TO RUN UNDER OR AROUND WATTLE.
4. WATTLES SHALL BE PLACED EVERY 12 FEET UP OR DOWN THE SLOPE.
5. AREAS WITH STRAW WATTLES SHALL BE SEEDED AND STRAW MULCHED IMMEDIATELY AFTER WATTLE INSTALLATION.

≥1:1	- 5' APART
2:1-1:1	- 10' APART
3:1-2:1	- 20' APART
4:1-3:1	- 30' APART
6:1-3:1	- 40' APART
≤ 6:1	- 50' APART

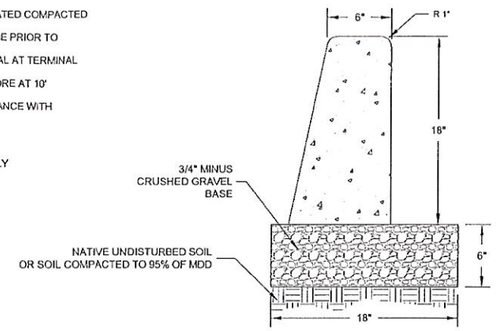


1.3 STRAW WATTLES
SCALE: NOT TO SCALE



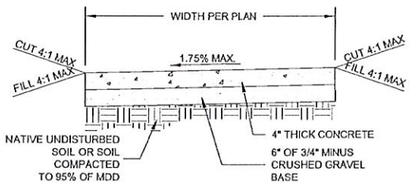
NOTES:
1. GRADE AND ALIGNMENT TO BE ESTABLISHED AND APPROVED BY THE ENGINEER.
2. BASE: 4" OF 3/4" MINUS CRUSHED AGGREGATED COMPACTED TO 95% OF STANDARD PROCTOR.
3. BASE SHALL BE A MIN. WIDTH OF 3' TO GRADE PRIOR TO SETTING FORMS.
4. 1/2" PERFORMED EXPANSION JOINT MATERIAL AT TERMINAL POINTS OF RADII.
5. CONTINUOUS PLACEMENT PREFERRED, SCORE AT 10' INTERVALS MAX. (8' W/SIDEWALK)
6. MATERIALS AND CONSTRUCTION IN COMPLIANCE WITH ISPWC.
7. BACKFILL AS PER ISPWC SECTION 706

NOTE: DETAIL PROVIDED FOR REFERENCE ONLY



2.3 TYPE A CURB
SCALE: NOT TO SCALE

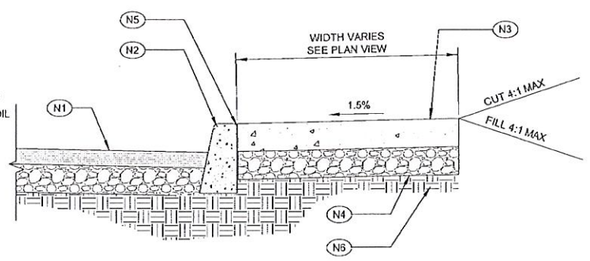
NOTES:
1. LOCATION, GRADE AND WIDTH TO BE ESTABLISHED BY THE ENGINEER.
2. BASE TO BE COMPACTED TO EXCEED 95% OF STANDARD DENSITY.
3. SLOPE SIDEWALK NOT TO EXCEED 1/4" PER FOOT (0.02 FT).
4. SCORE AT INTERVALS NOT TO EXCEED 5 FOOT SPACING.
5. THROUGH JOINTS WITH 1/2" PREFORMED BITUMINOUS JOINT AT 20' INTERVALS.
6. 1/2" TRAVERSE PREFORMED BITUMINOUS JOINTS AT TERMINUS POINTS FOR CURVE AND WHERE SIDEWALK IS PLACED NEXT TO PERMANENT FOUNDATION OR CURB.
7. MATERIALS AND CONSTRUCTION PER CITY STANDARDS.
8. WERE THERE IS A CURB REVEAL AT THE SIDEWALK EDGE, DEEPEN THE EDGE OF THE SLAB TO A MINIMUM DEPTH OF 18".
9. WHERE SIDEWALK IS ADJACENT TO CURB, INSTALL 1/2" PREFORMED EXPANSION JOINTS BETWEEN CURB AND SIDEWALK.



STANDARD SIDEWALK

3.5 PROPOSED SIDEWALK
SCALE: NOT TO SCALE

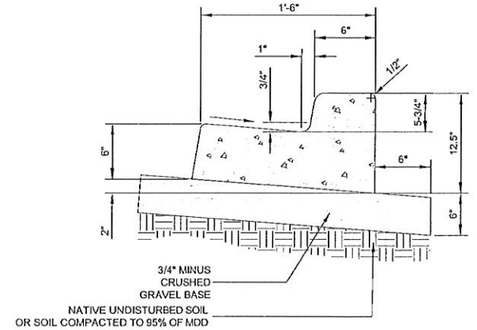
(N1) EXISTING ROADWAY
(N2) EXISTING CURB AND GUTTER VERIFY GRADE
(N3) PROPOSED 4" THICK SIDEWALK SEE DETAIL THIS SHEET
(N4) 6" THICKNESS 3/4" CRUSHED GRAVEL BASE
(N5) 1/2" FELT EXPANSION JOINT AT LOCATIONS WHERE SIDEWALK IS PLACED DIRECTLY AGAINST CURB
(N6) NATIVE UNDISTURBED SOIL OR SOIL COMPACTED TO 95% OF MDD



3.1 TYPICAL SIDEWALK SECTION ALONG CURB
SCALE: NOT TO SCALE

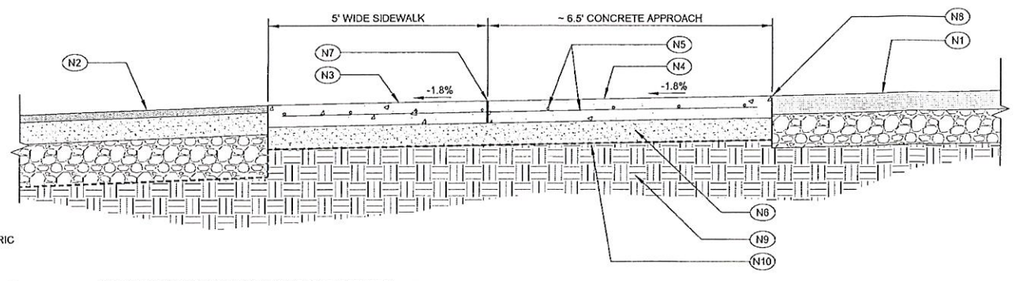
NOTES:
1. GRADE AND ALIGNMENT TO BE ESTABLISHED AND APPROVED BY THE ENGINEER.
2. BASE: 4" OF 3/4" MINUS CRUSHED AGGREGATED COMPACTED TO 95% OF STANDARD PROCTOR.
3. BASE SHALL BE A MIN. WIDTH OF 3' TO GRADE PRIOR TO SETTING FORMS.
4. 1/2" PERFORMED EXPANSION JOINT MATERIAL AT TERMINAL POINTS OF RADII.
5. CONTINUOUS PLACEMENT PREFERRED, SCORE AT 10' INTERVALS MAX. (8' W/SIDEWALK)
6. MATERIALS AND CONSTRUCTION IN COMPLIANCE WITH ISPWC.
7. BACKFILL AS PER ISPWC SECTION 706
8. AT APPROACHES TOP BACK OF CURB SHALL BE 1" ABOVE FLOWLINE OF CURB
9. CURB SHALL HAVE A 4" HEIGHT ALONG ONTARIO TO MATCH EXISTING.

NOTE: DETAIL PROVIDED FOR REFERENCE ONLY



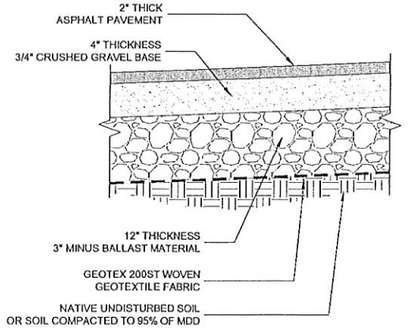
3.3 CURB AND GUTTER
SCALE: NOT TO SCALE

(N1) EXISTING ROADWAY
(N2) PROPOSED PARKING AREA/DRIVEWAY SEE DETAIL 4.4, THIS SHEET
(N3) PROPOSED 6" THICK SIDEWALK SEE DETAIL THIS SHEET
(N4) PROPOSED 6" THICK APPROACH SECTION
(N5) #4 REBAR AT 18" O.C. BOTH DIRECTION
(N6) 6" THICKNESS 3/4" CRUSHED GRAVEL BASE
(N7) 1/2" FELT EXPANSION JOINT BETWEEN APPROACH AND SIDEWALK
(N8) SAW CUT EDGE OF PAVEMENT AT APPROACH
(N9) NATIVE UNDISTURBED SOIL OR SOIL COMPACTED TO 95% OF MDD
(N10) GEOTEX 200ST WOVEN GEOTEXTILE FABRIC



4.1 APPROACH SECTION
SCALE: NOT TO SCALE

NOTE: 6" THICK CONCRETE SLAB APRONS ADJACENT TO BUILDING SHALL BE CONSTRUCTED IN A SIMILAR MANNER.



4.4 TYPICAL PAVEMENT SECTION
SCALE: NOT TO SCALE

PROFESSIONAL ENGINEER
LICENSED
14031
STATE OF IDAHO
JEFF JENSEN
05-03-18

James A. Sewell and Associates, LLC
1319 NORTH DIVISION AVENUE
SANDPOINT, IDAHO 83864
(208) 263-4160

No.	DATE:	REVISION	DR/CHK

SHEET TITLE: DETAILS

PROJECT: BONNER COUNTY EMS STATION
STORMWATER, GRADING, EROSION, UTILITIES
PONDERAY, BONNER COUNTY, IDAHO

DATE:	05-03-2018
SCALE:	AS SHOWN
DESIGNED:	JPJ/JFQ
DRAWN:	JFQ
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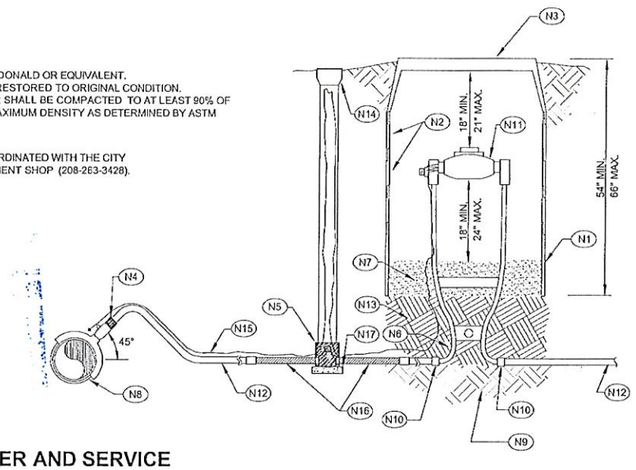
PROJ NO.:	08259-18-001
CAD FILE:	E-BONNER EMS

SHEET C3

(N1) CARSON-BROOKS BASE.
(N2) CARSON-BROOKS 6" EXTENSION RINGS AS REQUIRED
(N3) CARSON-BROOKS LID WITH METAL SERVICE ACCESS
(N4) 1-1/4" MIPT x 1-1/4" MIPT CORP STOP WITH FIPT COMPRESSION COUPLER.
(N5) 1-1/4" McDONALD CURB STOP FIPTxFIPT
(N6) 3/4" COPPER McDONALD METER SETTER.
(N7) GRANULAR FILL WITHIN 6" OF METER.
(N8) 1-1/4" ROMAC 202S IPT SADDLE TAP SIZED FOR WATER MAIN.
(N9) UNDISTURBED NATIVE SOIL OR COMPACTED BASE FOR METER SETTER.
(N10) 1-1/4" X 3/4" REDUCER
(N11) 3/4" BRONZE WATER METER, BADGER MODEL RCDL 25
(N12) 1-1/4" 200 PSI HDPE PIPE
(N13) BED METER SETTER W/ SAND, BACKFILL WITH COMPACTION
(N14) CURB BOX TYLER 28" x 36" 664A OR APPROVED EQUAL
(N15) 12GA UF TONING WIRE, SPLICE WITH HEAT SHRINK CONNECTORS.
(N16) BRASS PIPE NIPPLES, MIN. 12" EITHER SIDE OF VALVE
(N17) 8"X16"X2" CONCRETE BLOCK

NOTES:
1. ALL FITTINGS TO BE A.Y. McDONALD OR EQUIVALENT.
2. DISTURBED AREA IS TO BE RESTORED TO ORIGINAL CONDITION.
3. SOIL UNDER METER SETTER SHALL BE COMPACTED TO AT LEAST 90% OF THE MODIFIED PROCTOR MAXIMUM DENSITY AS DETERMINED BY ASTM D1557 METHOD C.

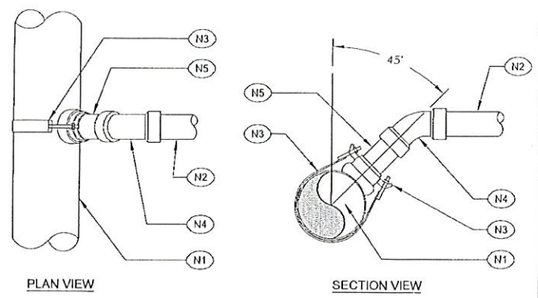
NOTE: CONNECTION TO BE COORDINATED WITH THE CITY OF SANDPOINT WATER DEPARTMENT SHOP (208-263-3428).



2.1 WATER METER AND SERVICE (CITY OF SANDPOINT STANDARD)
SCALE: NOT TO SCALE

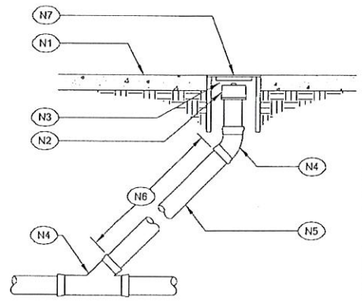
(N1) EXISTING SEWER MAIN (6" PVC)
(N2) 4" PVC 3034 SEWER SERVICE LINE MIN. SLOPE 1/4" PER FOOT
(N3) ROMAC CB 4.50 SEWER SADDLE OR ENGINEER APPROVED EQUAL
(N4) 45° ELBOW FITTING AS REQUIRED
(N5) 4" PVC 3034 PIPE (LENGTH AS REQUIRED)
(N6) CONNECT IN UPPER QUADRANT OF PIPE

NOTE: CONNECTION TO BE COORDINATED WITH THE KOOTENAI-PONDERAY SEWER DISTRICT (208-263-0229).



1.3 SEWER SERVICE CONNECTION
SCALE: NOT TO SCALE

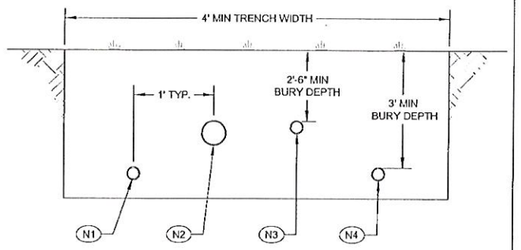
(N1) FINISHED GRADE
(N2) 4" PVC GLUE ON THREADED CAP
(N3) 2" CLEARANCE FOR SETTLEMENT
(N4) 4" PVC WYE
(N5) 4" PVC SEWER PIPE, MINIMUM SLOPE 1/4" PER FOOT
(N6) DISTANCE AS REQUIRED
(N7) BROOKS TRAFFIC VALVE BOX MODEL 1-RT WITH LID MARKED "C/O" SET TO GRADE (IF CLEANOUT IS LOCATED IN ASPHALT OR CONCRETE)



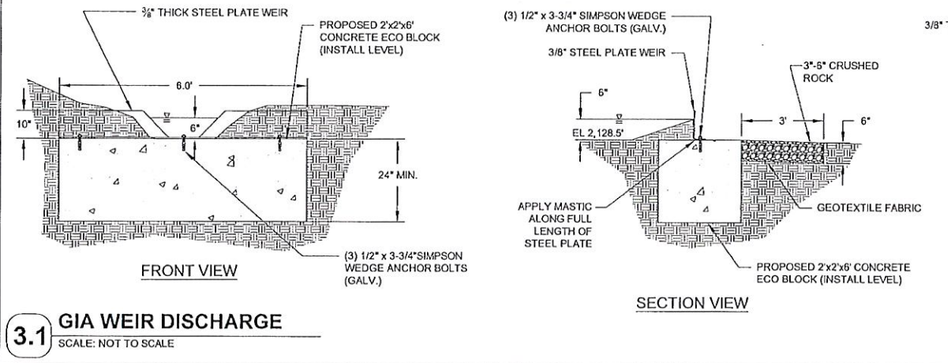
2.5 SEWER CLEANOUT
SCALE: NOT TO SCALE

(N1) POWER - 2" SCH. 40 PVC CONDUIT (AVISTA)
(N2) TELEPHONE - 4" SCH. 40 PVC (FRONTIER)
(N3) TELEVISION - 2" SCH. 40 PVC (NORTHLAND CABLE)
(N4) GAS MAIN (AVISTA)

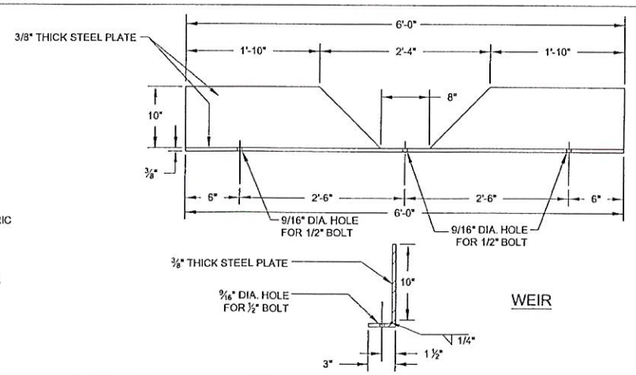
NOTE: COORDINATE TRENCH AND CONDUIT INSTALLATION WITH INDIVIDUAL UTILITY PROVIDERS.



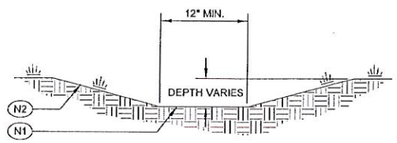
2.3 UTILITY TRENCH SCHEMATIC
SCALE: NOT TO SCALE



3.1 GIA WEIR DISCHARGE
SCALE: NOT TO SCALE



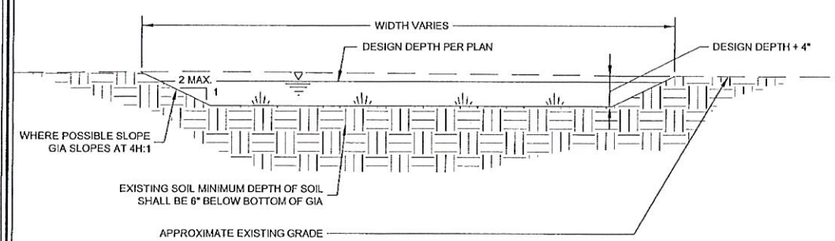
(N1) DRAINAGE CHANNEL INVERT MINIMUM SLOPE OF 0.25%
(N2) GRASSY VEGETATION



NOTE: GRASSY DRAINAGE CHANNEL SHALL BE INSTALLED DOWNSTREAM OF WEIR OUTLET TO DIRECT DRAINAGE TOWARDS THE SOUTH PROPERTY LINE.

3.5 GRASSY DRAINAGE CHANNEL
SCALE: NOT TO SCALE

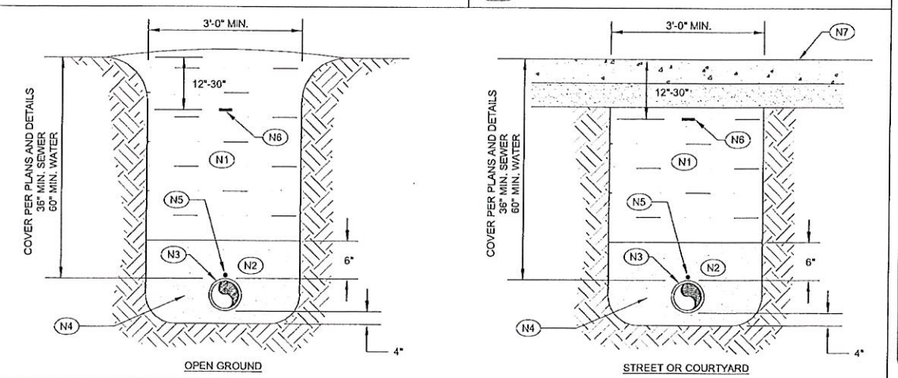
NOTE: BOTTOM OF G.I.A. TO BE CONSTRUCTED LEVEL THROUGHOUT.



4.1 GRASSED INFILTRATION AREA
SCALE: NOT TO SCALE

(N1) BACKFILL WITH NATIVE MATERIAL TO 90% STD. PROCTOR IN OPEN GROUND AND 95% UNDER CONCRETE AND ASPHALT
(N2) IN ROCK EXCAVATION, 12" ABOVE AND 6" BELOW PIPE SHALL BE BEDDED W/SAND
(N3) BURIED PIPELINE
(N4) AREA WITHIN 4" BELOW PIPE AND 6" ABOVE SHALL BE BEDDED WITH 3/4" MINUS CRUSHED AGGREGATE OR SAND BEDDING AND COMPACTED TO 95% STD. PROCTOR
(N5) INSTALL LOCATING WIRE 12 AWG COPPER WITH INSULATION. RUN WIRE UP VALVE BOXES & WRAP TWICE AROUND TOP OF BOXES
(N6) METALLIC LOCATOR TAPE
(N7) FINISHED GRADE OF CONCRETE OR PAVEMENT

NOTES:
1. TRENCH SIDE WALLS SHALL BE SLOPED AND/OR BRACED TO PROTECT WORKERS, ADJACENT PROPERTY, AND THE WORK.
2. WHERE TRENCH IS LOCATED IN EXISTING STREET, PAVEMENT CUT WITH SHALL BE 1' WIDER ON EACH SIDE OF TRENCH FOR PATCHING PURPOSES.



4.3 TRENCH DETAILS
SCALE: NOT TO SCALE

RECEIVED
MAY 07 2018
PLANNING OFFICE
CITY OF PONDERAY

PROFESSIONAL ENGINEERS LICENSED 14031 STATE OF IDAHO JEFF JENSEN
05-03-18

No.	DATE:	REVISION	DRN/CHK

James A. Sewell and Associates, LLC
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SHEET TITLE: DETAILS
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PROJ NO.:	08259-18-001
CAD FILE:	E-BONNER EMS

SHEET C4

WATER AND SEWER SPECIFICATIONS

GENERAL - WATER SYSTEM AND SEWER SYSTEM CONSTRUCTION SHALL CONFORM TO THE IDAHO STANDARDS FOR PUBLIC WORKS CONSTRUCTION (ISPWC), THE CITY OF SANDPOINT WATER STANDARDS, THE KOOTENAI-PONDERAY SEWER DISTRICT STANDARDS, PANHANDLE HEALTH DISTRICT, THE STATE OF IDAHO DEPT. OF ENVIRONMENTAL QUALITY AND IDAHO STATE PLUMBING CODE REQUIREMENTS. IN THE EVENT OF A CODE CONFLICT, THE MORE RESTRICTIVE CODE SHALL APPLY. ALL MATERIALS SHALL CONFORM TO THE APPLICABLE SECTIONS OF THE AMERICAN WATERWORKS ASSOCIATION (AWWA) STANDARDS, UNLESS OTHERWISE NOTED. IN THE EVENT OF CODE CONFLICT, THE MORE RESTRICTIVE CODE SHALL APPLY.

CONSTRUCTION INSPECTION - INSPECTION OF SYSTEM COMPONENTS SHALL BE SCHEDULED WITH THE ENGINEER, THE STATE PLUMBING INSPECTOR, AND THE UTILITY PROVIDERS. ALL COMPONENTS OF THE PROPOSED WATER & SEWER SYSTEMS SHALL BE LEFT UNCOVERED UNTIL APPROVED BY THE AUTHORITY HAVING JURISDICTION.

PIPE BEDDING - PIPE BEDDING SHALL COMPLY WITH THE ISPWC SECTION 300.

TRENCH PROTECTION - TRENCH PROTECTION SHALL CONFORM TO ISPWC SECTION 300.

PIPE TRENCH - TRENCHING SHALL CONFORM TO THE TYPICAL TRENCH DETAIL SHOWN AND IDAHO STANDARDS FOR PUBLIC WORKS SECTION 300 AND SECTION 400.

BACKFILL AND COMPACTION - PIPE BACKFILLING SHALL COMPLY WITH IDAHO STANDARDS FOR PUBLIC WORKS CONSTRUCTION SECTION 300. COMPACT ALL BACKFILL TO TOP OF TRENCH TO 90% DENSITY IN OPEN GROUND, AND 95% DENSITY IN ROADWAYS, IN ACCORDANCE WITH AASHTO T-99 PROCTOR DENSITY, IN MAXIMUM SIX-INCH LOOSE LIFTS.

WATER INSTALLATION - WATER INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND IDAHO STANDARDS FOR PUBLIC WORKS CONSTRUCTION SECTION 404. ALL PIPE SHALL BE LAID ON A STRAIGHT GRADE WITH NO LOCAL HIGH POINTS. PIPE SHALL NOT BE INSTALLED UNTIL TRENCH HAS BEEN COMPLETELY DEWATERED BELOW THE BASE OF THE BEDDING COURSE.

SEWER INSTALLATION - SEWER INSTALLATION SHALL CONFORM TO THE MANUFACTURER'S RECOMMENDED STANDARDS AND TO SECTION 502 OF THE ISPWC, AT THE DEPTH SHOWN ON THE DRAWINGS. TRENCH SHALL BE COMPLETELY DEWATERED PRIOR TO PIPELINE INSTALLATION. GRAVITY PIPELINE SHALL BE LAID AND MAINTAINED TO THE REQUIRED LINES AND GRADES WITH STRUCTURES AT THE REQUIRED LOCATIONS. VARIANCE FROM ESTABLISHED LINE AND GRADE IN SEWER GRAVITY LINES SHALL NOT BE GREATER THAN 1/32" PER INCH DIAMETER, NOT TO EXCEED 1/2", PROVIDED THAT SUCH VARIATION DOES NOT RESULT IN A LEVEL OR REVERSE SLOPING INVERT. A LASER SHALL BE USED FOR CONTROL OF THE HORIZONTAL AND VERTICAL PLACEMENT OF THE SEWER.

TONING WIRE SPECIFICATION - INSTALL 12 GA. TONING WIRE IN ALL PIPE DITCHES, EVEN THOSE DITCHES WHICH ALSO HAVE ELECTRICAL CABLE, INCLUDING SERVICE LINE DITCHES FROM THE MAIN TO EITHER SEPTIC TANK OR CLEANOUT. THE ENDS SHALL BE TERMINATED IN VALVE BOXES. SPLICES SHALL BE LOCATED NOT LESS THAN 250' SPACING AND WATERTIGHT. INDIVIDUAL BUTT CONNECTORS SHALL BE USED FOR WIRES, THEN INDIVIDUAL "HEAT SHRINK" TUBING PLACED OVER EACH BUTT SPLICE, THEN A LENGTH OF LARGER HEAT SHRINK TUBING SHALL BE PLACED OVER THE ENTIRE CABLE WITH A 2" MINIMUM OVERLAP OVER THE OUTER INSULATION ON BOTH SIDES OF SPLICE. THE ENTIRE SPLICE SHALL BE WRAPPED WITH ELECTRICAL TAPE.

SEWER PIPE - BURIED GRAVITY SEWER PIPE AND FITTINGS SHALL CONFORM TO THE REQUIREMENTS OF ASTM D3034 WITH A MAXIMUM SDR OF 41. ALL BURIED PIPE JOINTS TO HAVE O-RING GASKETS. BUILDING DRAINAGE PIPING SHALL BE 4" D3034. PRESSURE SEWER MAIN LINES SHALL BE ASTM CLASS 160 PVC WITH EITHER GASKETED OR SOLVENT WELDED JOINTS. IF GASKETED JOINTS ARE USED ALL FITTINGS SHALL BE RESTRAINED WITH THRUST BLOCKS OR MECHANICAL JOINTS APPROVED BY THE ENGINEER. PRESSURE SEWER SERVICES SHALL BE 1-1/4" CLASS 200 HDPE WITH BRASS PACK JOINT OR FUSION WELD FITTINGS.

WATER PIPE - WATER PIPE 3" DIAMETER AND SMALLER SHALL CONFORM TO ASTM D2239 200 PSI, SIDR 7 POLYETHYLENE OR SCH. 40 PVC PIPE. WATER PIPE LARGER THAN 3" SHALL CONFORM TO AWWA C900 CL150 FOR PVC.

WATER PIPE FITTINGS - PIPE FITTINGS 4" AND LARGER SHALL CONFORM TO AWWA C110 GRAY IRON AND DUCTILE IRON. FITTINGS SHALL BE MECHANICAL JOINT (M.J.) CONFORMING TO AWWA C111 USING TRANSITION GASKETS FOR ASTM PVC PIPE. PIPE FITTINGS SMALLER THAN 4" SHALL BE WELDED SCHEDULE 40 PVC, TYPE "K" COPPER OR FUSION WELD JOINTS.

VALVES - GATE VALVES SHALL CONFORM TO AWWA C509. VALVES SHALL HAVE RESILIENT WEDGE, NON-RISING STEMS WITH "O" RING SEALS AND ENDS AS NOTED. VALVES SHALL BE "MUELLER" BRAND OR EQUAL. VALVES SHALL INCLUDE A TWO PIECE CAST IRON VALVE BOX SUITABLE FOR THE BURIAL DEPTH REQUIRED.

CURB STOPS - CURB STOPS SHALL BE 175 LB. STOP AND WASTE CURB VALVES, AND SHALL BE MUELLER MARK II ORISEAL CURB VALVE OR EQUAL. CURB STOPS SHALL INCLUDE A CAST IRON CURB BOX WITH ARCH PATTERN BASE.

WATER SERVICE CONNECTION - CONNECTION OF WATER SERVICE LINE TO MAIN LINE SHALL BE MADE WITH A MAIN LINE SIZE SERVICE CLAMP FOR 8" MAIN. SERVICE CLAMPS SHALL BE BRONZE SERVICE CLAMPS FOR PVC MAIN LINE, AS MANUFACTURED BY MUELLER OR EQUAL.

SEWER SERVICE CONNECTION - CONNECTION OF SEWER SERVICE LINE TO MAIN LINE SHALL BE MADE WITH ROMAC CB SEWER SADDLE PROPERLY SIZED FOR THE MAIN AND BRANCH SEWER LINES.

PRESSURE AND LEAKAGE TEST - AFTER COMPLETE INSTALLATION FOR THE CONSTRUCTION PHASE, INCLUDING SERVICE CONNECTIONS, ALL WATER PIPELINES SHALL BE PRESSURE TESTED TO A PRESSURE OF 150 PSI IN ACCORDANCE WITH ISPWC SECTION 400. BEFORE APPLYING THE SPECIFIED TEST PRESSURE, AIR SHALL BE EXPELLED COMPLETELY FROM THE PIPES, VALVES, AND HYDRANTS. PRESSURE SHALL BE MAINTAINED UNTIL THE ENGINEER OR HIS INSPECTOR HAVE DETERMINED THAT THE SECTION OF PIPE, VALVES, AND FITTINGS ARE WATERTIGHT. THE TEST PRESSURE IN THE WATER MAINS SHALL BE MAINTAINED FOR A MINIMUM OF 2 HOURS, VERIFY THAT DURING THE 2 HOUR TEST, THE PIPE DOES NOT LEAK IN EXCESS OF THAT ALLOWED BY SECTION 401.3.6 OF THE ISPWC. AFTER INSTALLATION, ALL PRESSURE SEWER PIPE SHALL BE TESTED TO A MINIMUM PRESSURE OF 125 PSI FOR 1.5 HOURS, VERIFY THAT DURING THE 1.5 HOUR TEST, THE PIPE DOES NOT LEAK IN EXCESS OF THAT ALLOWED BY SECTION 401.3.6 OF THE ISPWC.

FLUSHING - AFTER THE PRESSURE TEST IS COMPLETE. FLUSH ALL WATER MAINS THOROUGHLY AT MINIMUM FLUSHING VELOCITY OF 2.5 FPS PER ISPWC SECTION 401

DISINFECTION AND FINAL FLUSHING OF WATER MAINS - AFTER COMPLETE WATER MAIN AND SERVICE LINE INSTALLATION FOR THE CONSTRUCTION PHASE, ALL NEW WATER SYSTEM COMPONENTS SHALL BE DISINFECTED IN ACCORDANCE WITH AWWA C651 AND ISPWC SECTION 401 STANDARD SPECS CONTINUOUS FEED METHOD. USE AN APPROVED SOURCE TO FEED CLEAN WATER INTO THE NEWLY LAID WATER MAIN. FILL AT A POINT NOT MORE THAN 10' DOWNSTREAM FROM THE BEGINNING OF THE NEW MAIN. MEASURE THE CHLORINE DOES AT REGULAR INTERVALS AND ENSURE THAT THE MINIMUM CONCENTRATION IS 25 MG/L. DO NOT STOP CHLORINE APPLICATION UNTIL THE ENTIRE MAIN IS FILLED WITH WATER. RETAIN CHLORINATED WATER IN THE MAIN FOR AT LEAST 24 HOURS, OPERATING ALL VALVES AND HYDRANTS IN THE TEST SECTION. AT THE END OF THE 24 HOUR TEST PERIOD, VERIFY THAT THE TREATED WATER IN ALL SECTIONS OF THE MAIN HAS A MINIMUM RESIDUAL CONCENTRATION OF 10 MG/L OF CHLORINE. AFTER DISINFECTION AND PRIOR TO PUBLIC USAGE, THE DISINFECTING SOLUTION SHALL BE FLUSHED FROM THE SYSTEM AT ITS EXTREMITIES UNTIL THE REPLACEMENT WATER HAS THE SAME CONCENTRATION OF CHLORINE AS THE WATER ENTERING THE MAIN OR IS ACCEPTABLE FOR DOMESTIC USE. AFTER FINAL FLUSHING AND BEFORE THE MAIN IS PLACED IN SERVICE, TWO COLIFORM BACTERIA TEST SAMPLES SHALL BE TAKEN A MINIMUM OF 24 HOURS APART AND THE RESULTS SUBMITTED TO THE ENGINEER AND THE CITY. CHLORINATED WATER SHALL BE DISPOSED OF IN ACCORDANCE WITH AWWA C651. AN ALTERNATE METHOD OF DISINFECTION CONFORMING TO AWWAC651 AND THE ISPWC SECTION 401 CAN BE SUBSTITUTED FOR THE CONTINUOUS FEED METHOD WITH PRIOR APPROVAL FROM THE ENGINEER.

TESTING - PLUMBING SYSTEMS SHALL BE TESTED PER IDAHO STATE PLUMBING CODE REQUIREMENTS.

2.1 UTILITY SPECIFICATIONS
SCALE: NO SCALE

GENERAL - STORM WATER AND EROSION CONTROL SHALL CONFORM TO THE CITY OF PONDERAY REQUIREMENTS. THE CONTRACTOR SHALL PROVIDE DUST CONTROL FOR CONSTRUCTION OPERATIONS. THE CONTRACTOR SHALL REPORT SIGNIFICANT CONFLICTS BETWEEN CONDITIONS SHOWN ON PLANS AND CONDITIONS ENCOUNTERED IN THE FIELD TO THE OWNER AND THE ENGINEER OR THE ENGINEER'S REPRESENTATIVE. THE CONTRACTOR SHALL MAKE ALL NECESSARY CONSTRUCTION NOTIFICATIONS.

DUST CONTROL - CONTRACTOR SHALL PROVIDE WATER OR EQUIVALENT SUBSTITUTION TO LIMIT AND REDUCE DUST DURING CONSTRUCTION.

CONSTRUCTION ENTRANCE - DURING CONSTRUCTION, A STABILIZED CONSTRUCTION ENTRANCE SHALL BE PROVIDED AT THE ENTRANCE TO THE SITE. ENTRANCE SHALL CONSIST OF 3" MINUS CAP-ROCK FOR A MINIMUM TRAVEL LENGTH OF 50'. CONTRACTOR SHALL INSPECT AND CLEAN STREET ON A DAILY BASIS TO PREVENT SEDIMENT MIGRATION AND TRANSPORT FROM THE SITE.

CONSTRUCTION STAGING - A CONSTRUCTION STAGING AREA SHALL BE DELINEATED TO LIMIT CONSTRUCTION VEHICLE DISTURBANCES.

EXCESS EXCAVATION - EXCESS EXCAVATION SHALL BE PLACED WERE DIRECTED BY THE OWNER AND THE ENGINEER.

MATERIAL STOCK PILES - ALL ERODABLE STOCK PILED MATERIALS SHALL BE COVERED WITH TARPS AND SECURED, OR THE BASE OF THE STOCK PILES SHALL BE SURROUNDED BY SILT FENCE.

SEEDING - ALL BIOFILTRATION SWALES SHALL BE SEEDED WITH LAWN TYPE NATIVE SEED MIXTURE. RECOMMENDATIONS FOR SEEDING MIXTURE MAY BE OBTAINED FROM THE U.S.D.A. NATURAL RESOURCE CONSERVATION SERVICE, LANDSCAPE ARCHITECT OR COMMERCIALLY MARKETED GRASS MIXTURE MAY BE APPLIED ACCORDING TO THE ATTACHED INSTRUCTIONS.

EROSION CONTROL - EROSION CONTROL SHALL BE MAINTAINED THROUGH THE USE OF EXISTING VEGETATION, SILT FENCING, STRAW WATTLES, AND RESEEDING OF AREAS DENUDED OF VEGETATION. SILT FENCING OR STRAW WATTLES SHALL BE PLACED AS SHOWN ON THE PLAN SET AND DOWNSTREAM OF ALL DISTURBED SOIL AREAS. AREAS WHERE CONSTRUCTION ACTIVITIES TEMPORARILY CEASE FOR MORE THAN 21 DAYS SHALL BE STABILIZED WITH SEEDING OR OTHER METHODS OF STABILIZATION APPROVED BY THE ENGINEER OR HIS REPRESENTATIVE. LESS THAN ONE HALF THE SITE SHALL BE DENUDED OF VEGETATION AT ANY ONE TIME. ALL EROSION CONTROL MEASURES SHALL BE MAINTAINED IN GOOD WORKING ORDER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE OF EROSION CONTROL MEASURES UNTIL SUCH TIME THAT FINAL STABILIZATION OF THE SITE IS COMPLETE.

INSPECTIONS - THE CONTRACTOR SHALL INSPECT ALL STORM WATER AND EROSION CONTROL MEASURES AT LEAST ONCE EVERY 7 DAYS UNTIL SUCH TIME THAT FINAL STABILIZATION IS COMPLETE. THE FOLLOWING ITEMS SHALL BE INSPECTED:

- SILT FENCE
  - DEPTH OF SEDIMENT (SEDIMENT SHALL BE REMOVED WHEN IT REACHES 1/3 THE HEIGHT OF THE SILT FENCE)
  - FENCE CONTACT WITH GROUND
  - STAKES FIRMLY IN GROUND
- STRAW WATTLES
  - DEPTH OF SEDIMENT (SEDIMENT SHALL BE REMOVED WHEN IT REACHES 1/2 THE HEIGHT OF THE STRAW WATTLE)
  - WATTLES IN CONTACT WITH GROUND
  - STAKES FIRMLY IN GROUND
- RESEEDING
  - BARE SPOTS, WASHOUTS, AND HEALTHY GROWTH
- BIOFILTRATION SWALES
  - DEPTH OF SEDIMENT (SEDIMENT SHALL BE REMOVED WHEN IT REACHES 10% OF THE DESIGN CAPACITY OF THE GIA, AND/OR AT THE END OF CONSTRUCTION)
- CATCH BASINS AND STORM DRAIN PIPES
  - SEDIMENT BUILDUP
  - CLOGS IN PIPES

THE ENGINEER OR THE ENGINEER'S REPRESENTATIVE SHALL BE NOTIFIED 24 HOURS IN ADVANCE OF THE FOLLOWING INSTALLATIONS:

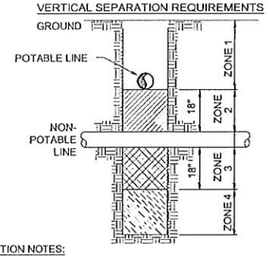
- TEMPORARY EROSION CONTROL MEASURES
  - SILT FENCE
  - STRAW WATTLES
  - RESEEDING
- BIOFILTRATION SWALES
- CATCH BASINS AND STORM DRAINS

AFTER FINAL STABILIZATION - UPON COMPLETION OF CONSTRUCTION AND FINAL STABILIZATION, THE OWNERS SHALL TAKE RESPONSIBILITY FOR OPERATION AND MAINTENANCE OF THE STORM WATER MANAGEMENT AND EROSION CONTROL SYSTEM AS WELL AS THE FUNDING FOR THE CONTINUED MAINTENANCE OF THIS SYSTEM. AFTER FINAL STABILIZATION, THE STORM WATER MANAGEMENT AND EROSION CONTROL SYSTEM SHALL BE INSPECTED AT LEAST EVERY SIX MONTHS. THE ITEMS THAT SHALL BE INSPECTED ARE:

- RESEEDED AREAS
  - BARE SPOTS, WASHOUTS, AND HEALTHY VEGETATION GROWTH

2.5 STORMWATER SPECS
SCALE: NO SCALE

VERTICAL SEPARATION REQUIREMENTS



VERTICAL SEPARATION NOTES:

ZONE 1: A). POTABLE WATER, NON-POTABLE WATER, AND SERVICE LINES MUST BE SEPARATED BY AT LEAST 18 INCHES, AND
B). POTABLE PIPELINE JOINTS MUST BE AS FAR AS POSSIBLE FROM THE NON-POTABLE WATER PIPELINE.

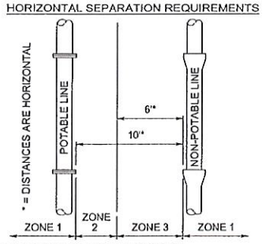
ZONE 2: POTABLE LINE <18" OVER TOP OF NON-POTABLE LINE.
A). POTABLE PIPELINE JOINTS MUST BE AS FAR AS POSSIBLE FROM THE NON-POTABLE PIPELINE, AND
EITHER B). NON-POTABLE LINE MUST BE CONSTRUCTED WITH POTABLE WATER CLASS PIPE WITH A SINGLE 20' SECTION OF POTABLE WATER CLASS PIPE CENTERED ON THE CROSSING;
OR C). SLEEVE NON-POTABLE OR POTABLE PIPELINE WITH POTABLE WATER CLASS PIPE FOR 10' EITHER SIDE OF THE CROSSING.

ZONE 3: SAME REQUIREMENTS AS ZONE 2 EXCEPT THE NON-POTABLE LINE MUST ALSO BE SUPPORTED ABOVE THE CROSSING TO PREVENT SETTLING.

ZONE 4: SAME REQUIREMENTS AS ZONE 1 EXCEPT THE NON-POTABLE LINE MUST ALSO BE SUPPORTED ABOVE THE CROSSING TO PREVENT SETTLING.

SEWAGE FORCE MAINS SHALL HAVE AT LEAST EIGHTEEN INCHES OF CLEARANCE FROM POTABLE WATER MAINS AND ZONE 2 AND 3 PLACEMENTS ARE PROHIBITED. SEPARATION REQUIREMENTS ALSO APPLY TO EXISTING POTABLE SERVICES IN RELATION TO NEW NON-POTABLE MAINS, EXISTING NON-POTABLE SERVICES IN RELATION TO NEW POTABLE MAINS, EXISTING POTABLE SERVICES IN RELATION TO NEW NON-POTABLE SERVICES, AND POTABLE AND NON-POTABLE SERVICE LINES, WHERE PRACTICAL, BASED ON COST, CONSTRUCTION FACTORS AND PUBLIC HEALTH SIGNIFICANCE. WHERE DEQ DETERMINES THAT THERE ARE SIGNIFICANT HEALTH CONCERNS WITH SERVICES, THE DESIGN SHALL CONFORM TO THE ABOVE INFORMATION.

HORIZONTAL SEPARATION REQUIREMENTS



HORIZONTAL SEPARATION REQUIREMENT NOTES:

ZONE 1: MORE THAN 10 FEET APART:
A). NO SPECIAL REQUIREMENTS.

ZONE 2: FROM 10 TO 6 FEET APART:
A). SEPARATE TRENCHES
B). POTABLE AND NON-POTABLE MAINS SEPARATED BY AT LEAST 6 FEET AT OUTSIDE WALLS, AND
C). POTABLE MAINS HIGHER IN ELEVATION THAN THE NON-POTABLE MAINS, AND
D). NON-POTABLE MAINS CONSTRUCTED WITH POTABLE WATER CLASS PIPE.

ZONE 3: CLOSER THAN 6 FEET APART:
A). FOR MAINS AND SERVICES, DESIGN ENGINEER TO SUBMIT DATA TO DEPARTMENT FOR REVIEW AND APPROVAL THAT THIS INSTALLATION WILL PROTECT PUBLIC HEALTH AND ENVIRONMENT AND NON-POTABLE LINE CONSTRUCTED WITH POTABLE WATER CLASS PIPE. POTABLE MAIN HIGHER IN ELEVATION THAT NON-POTABLE MAIN

FOR DETAILS REFER TO IDAPA 58.01.08.542.07: IDAHO RULES FOR PUBLIC DRINKING WATER SYSTEMS OR IDAPA 58.01.16.430.0: IDAHO WASTEWATER RULES.

SEWAGE FORCE MAINS SHALL HAVE AT LEAST TEN FEET OF HORIZONTAL SEPARATION FROM POTABLE MAINS - ZONE 2 AND ZONE 3 PLACEMENTS ARE PROHIBITED. NEW POTABLE SERVICES CAN BE LOCATED WITHIN 6' OF NON-POTABLE MAINS.

HORIZONTAL SEPARATION REQUIREMENTS ALSO APPLY TO POTABLE AND NON-POTABLE SERVICE LINES CONTROLLED BY THE SYSTEM OWNER AND EXTENDING THE MAIN LINE TO THE PROPERTY LINE, SERVICE METER, OR CLEANOUT.

NOTES:
1. THE TERM "LINE" APPLIES TO BOTH MAIN LINES AND SERVICE LINES.
2. SITE SPECIFIC APPROVAL BY THE DEPARTMENT IS REQUIRED BEFORE SEPARATION LESS THAN 6 FEET (ZONE 3) IS INSTALLED.

4.1 SEPARATION REQUIREMENTS
SCALE: NO SCALE

GENERAL - ALL CONSTRUCTION SHALL CONFORM TO THE IDAHO STANDARDS FOR PUBLIC WORKS CONSTRUCTION (ISPWC) AND THE IDAHO TRANSPORTATION DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (HEREAFTER REFERRED TO AS STANDARD SPECIFICATIONS). ALL MATERIALS SHALL CONFORM TO THE APPLICABLE SECTION OF THE ISPWC. IN CASE OF A CODE CONFLICT THE MORE RESTRICTIVE CODE SHALL APPLY.

CLEARING AND GRUBBING - CLEARING AND GRUBBING SHALL BE COMPLETED IN ACCORDANCE WITH SECTION 201 OF THE ISPWC. CLEARED AND GRUBBED MATERIAL SHALL BE DISPOSED OF OFF-SITE OR WASTED ON-SITE AT A LOCATION APPROVED BY THE OWNER.

EXCESS EXCAVATION - EXCESS EXCAVATION SHALL BE PLACED WHERE DIRECTED BY THE OWNER OR THE ENGINEER. EXCESS EXCAVATION THAT CANNOT BE WASTED ON SITE SHALL BE DISPOSED OF AT AN OFF-SITE LOCATION AT CONTRACTORS EXPENSE.

GEOTEXTILE FABRIC - WHERE USED FABRIC SHALL BE GEOTEX 200ST OR EQUAL.

EARTHWORK - EARTHWORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 200 OF THE ISPWC. SUBGRADE SHALL BE CONSTRUCTED TO WITHIN ONE-TENTH (0.1) FOOT OF LINES AND GRADES AS SHOWN ON THE PLANS. SUBGRADE COMPACTION SHALL BE TO 95% MAXIMUM DRY DENSITY (MDD) PER ASTM D698 (STANDARD PROCTOR).

SUBGRADE - ALL VEGETATIVE MATERIAL SHALL BE REMOVED FROM PROPOSED IMPERVIOUS SURFACE AREAS (ROADWAYS, DRIVEWAYS, PATHWAYS, ETC) PRIOR TO PLACEMENT OF ANY FABRIC OR GRANULAR MATERIAL. SUBGRADE SHALL CONSIST OF NATIVE MATERIAL COMPACTED TO 95% OF MDD.

BASE COURSE - BASE COURSE MATERIAL SHALL CONSIST OF A COMPACTED THICKNESS OF 3/4" MINUS CRUSHED AGGREGATE CONFORMING TO SECTION 703.04 OF THE STANDARD SPECIFICATIONS.

SUBBASE COURSE - SUBBASE COURSE MATERIAL SHALL CONSIST OF A COMPACTED THICKNESS OF 3" MINUS CRUSHED AGGREGATE CONFORMING TO SECTION 703.11 OF THE STANDARD SPECIFICATIONS

CAP ROCK - IF USED CAP ROCK MATERIAL SHALL CONFORM TO SECTION 703.08 OF THE STANDARD SPECIFICATIONS AND SHALL BE CLEAN, ANGULAR, CRUSHED QUARRY ROCK, FREE OF CLAY COATINGS, LUMPS AND SOFT OR FLAKY PARTICLES.

ASPHALT CONCRETE - ASPHALT CONCRETE SHALL CONFORM TO THE LATEST VERSION OF THE IDAHO TRANSPORTATION DEPARTMENT SUPPLEMENTAL SPECIFICATIONS REQUIREMENTS FOR SUPERPAVE SP-2 ASPHALT.

4.3 SITE WORK SPECIFICATIONS
SCALE: NO SCALE

COMPACTION - IN-PLACE COMPACTION TESTS TO VERIFY ACHIEVEMENT OF REQUIRED DENSITIES MUST BE PERFORMED ON ALL SUBGRADE MATERIALS AND BITUMINOUS SURFACING AND SHALL BE SCHEDULED WITH THE ENGINEER PRIOR TO CONSTRUCTION. COMPACTION TESTS SHALL BE PERFORMED AT 300' MAXIMUM INTERVALS.

SIGNAGE AND STRIPING - ALL SIGNAGE AND STRIPING SHALL CONFORM TO THE LATEST ADDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES. PERMANENT PAVEMENT MARKINGS SHALL CONFORM TO THE ISPWC SECTION 1104

PROPERTY CORNERS - CONTRACTOR SHALL PRESERVE AND PROTECT ALL PROPERTY CORNERS. ANY CORNERS THAT ARE DISTURBED OR DESTROYED SHALL BE REPLACED BY A REGISTERED LAND SURVEYOR AT THE CONTRACTORS EXPENSE.

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05-03-18

NO.	DATE:	REVISION	DRN/CHK

James A. Sewell and Associates, LLC
1319 NORTH DIVISION AVENUE
SANDPOINT, IDAHO 83864
(208) 263-4160

SHEET TITLE: SITEWORK SPECIFICATIONS

PROJECT: BONNER COUNTY EMS STATION
STORMWATER, GRADING, EROSION, UTILITIES
PONDERAY, BONNER COUNTY, IDAHO

DATE:	05-03-2018
SCALE:	AS SHOWN
DESIGNED:	JPJ/JFQ
DRAWN:	JFQ
CHECKED:	TCB
PROJ NO.:	08259-18-001
CAD FILE:	E-BONNER EMS

SHEET C5