MALLOY TERRACE PUD
PHASE 1 CONSTRUCTION PLANS

CITY OF FERNDALE / WHATCOM COUNTY
SECTION 18, TOWNSHIP 39 NORTH, RANGE 2 EAST OF W.M.

N VICINITY MAP

SHEET INDEX

PROJECT CONTACT INFORMATION

OWNER
Jim LeBlonde - (360) 715-3277
P.O. Box 28576
Bellingham, WA 98228

ENGINEER OF RECORD
Cascade Engineering Group, PS, Inc.
Craig Parkinson, P.E. - (360) 306-8161
119 Grand Avenue, Suite D
Bellingham, WA 98225

CONTRACTOR
Dirt Works, Inc.
Jim LeBlonde - (360) 715-3277
P.O. Box 28576
Bellingham, WA 98228

SURVEYOR
Construction Surveyors North Central Washington
Chris Eden, PLS - (509) 881-8315
854 N. Manchester Place
East Wenatchee, WA 98802

LEGEND

EXISTING	PROPOSED	
40	40	MAJOR CONTOUR
41	41	MINOR CONTOUR
		CENTER LINE
W	WA	WATER LINE
		WATER SERVICE
		FIRE HYDRANT
		WATER METER
SS	SS	SEWER LINE
FM		FORCE MAIN
		SEWER SERVICE
		SEWER MANHOLE
		SEWER CLEANOUT
SD	SD	STORM LINE
SD	SD	STORM CULVERT
		STORM SERVICE
		STORM DRAIN CATCH BASIN
	SD SD	BACK OF WALK DRAIN
	SD SD	LOT DRAIN
		STORM DRAIN CLEANOUT
		LOT DRAIN
PR	UP	UNDERGROUND POWER
		STREET LIGHT

ABBREVIATIONS

CBI	CATCH BASIN INSERT
DI	DUCTILE IRON
E	EASTING
EG	EXISTING GROUND
ELEV	ELEVATION
EXST	EXISTING
FG	FINISHED GRADE
FF	FINISH FLOOR
FT	FEET
IE	INVERT ELEVATION
L	LEFT
LF	LENGTH FEET
MIN	MINIMUM
MJ	MECHANICAL JOINT
N	NORTHING
PC	POINT OF CURVE
PCC	POINT OF COMPOUND CURVE
PRC	POINT OF REVERSE CURVE
PT	POINT OF TANGENT
PVC	POLYVINYLCHLORIDE
R	RIGHT
SDCB	STORM DRAIN CATCH BASIN
SSCO	SEWER CLEANOUT
SSMH	SEWER MANHOLE
STA	STATION
TB	THRUST BLOCK
TYP	TYPICAL

ENGINEER'S CERTIFICATION:
"I HEREBY CERTIFY THAT THE IMPROVEMENTS OF MALLOY TERRACE PHASE 1 HAVE BEEN INSPECTED BY CASCADE ENGINEERING GROUP, AND HAVE BEEN CONSTRUCTED IN GENERAL CONFORMANCE WITH THE PLANS APPROVED BY THE PUBLIC WORKS DIRECTOR FOR SAID DEVELOPMENT, AND THE GENERAL SPECIFICATIONS ADOPTED BY THE CITY OF FERNDALE DEPARTMENT OF PUBLIC WORKS."

CRAIG PARKINSON, P.E. — DATE 7/2/2019

CALL BEFORE YOU DIG
Call: TOLL FREE
1-800-424-5555

APPROVED
JUL 09 2019
CITY OF FERNDALE
PUBLIC WORKS DEPARTMENT

RECORD DRAWING 7/02/2019

FERNDALE, WASHINGTON
MALLOY TERRACE PUD
PHASE 1 CONSTRUCTION
COVER SHEET, INDEX, LEGEND, VICINITY MAP
00671.001 07/17/2019 KB

CRAIG R. PARKINSON — STATE OF WASHINGTON — 25783 — REGISTERED PROFESSIONAL ENGINEER

CASCADE ENGINEERING GROUP, P.S., INC.
119 Grand Avenue, Suite D
Bellingham, Washington 98225
(360) 306-8161

REVISIONS	DATE
CITY COMMENTS	7/25/18
CITY COMMENTS	09/05/18
RECORD INFO	07/02/19

DATE: 2/9/2018
DESIGN:
DRAWN: LCP
CHECKED:

SCALE: AS SHOWN

PROJECT NUMBER:
MDGX0001

SHEET NO.
C01
OF 45

07/02/2019 4:19PM P:\M\MDGX0001\040CAD\DWG\Sheets\PHASE 1 CONSTRUCTION PLANS\C01-TITLE SHEET-PH1.dwg

CITY OF FERNDALE GENERAL NOTES

GENERAL REQUIREMENTS:

1. ALL WORK AND MATERIALS SHALL CONFORM TO THESE PLANS AND TO THE REQUIREMENTS OF THE CURRENT EDITION OF THE "STATE OF WASHINGTON, DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND MUNICIPAL CONSTRUCTION, AND ITS AMENDMENTS" (WSDOT SPECS.) AND STANDARD PLANS, THE CITY OF FERNDALE DEVELOPMENT STANDARDS (COFDS) AND THE 2005 VERSION OF THE DEPARTMENT OF ECOLOGY STORM WATER MANAGEMENT MANUAL FOR WESTERN WASHINGTON (DOE MANUAL). IN CASE OF A CONFLICT BETWEEN PLANS, REGULATORY STANDARDS OR SPECIFICATIONS, THE MORE STRINGENT REQUIREMENT WILL PREVAIL.

2. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL VERIFY THAT ALL REQUIRED PERMITS AND APPROVALS HAVE BEEN OBTAINED. NO CONSTRUCTION OR FABRICATION SHALL BEGIN UNTIL THE CONTRACTOR HAS RECEIVED AND THOROUGHLY REVIEWED ALL PLANS AND OTHER CONSTRUCTION DOCUMENTS APPROVED BY ALL OF THE PERMITTING AUTHORITIES. THROUGHOUT THE PERIOD OF CONSTRUCTION, CONTRACTOR SHALL COMPLY WITH THE TERMS OF ALL PERMITS.

3. THE CONTRACTOR MUST HAVE A FULL SET OF CITY CONTRACT DOCUMENTS ON THE SITE WHENEVER CONSTRUCTION IS IN PROGRESS.

4. CONSTRUCTION NOISE SHALL BE LIMITED TO BETWEEN 7 a.m. TO 8 p.m., MONDAY THROUGH FRIDAY. WEEKEND WORK REQUIRING INSPECTION MUST BE APPROVED BY PUBLIC WORKS. REQUESTS WILL BE MADE A WEEK IN ADVANCE.

5. THE CONTRACTOR SHALL CONTACT THE UTILITIES UNDERGROUND LOCATION CENTER AT LEAST 72 HOURS PRIOR TO STARTING CONSTRUCTION. PHONE: 1-800-424-5555. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONTACT ALL OF THE VARIOUS UTILITY COMPANIES TO ARRANGE FOR FIELD LOCATIONS OF ALL EXISTING UTILITY FACILITIES. NO EXTRA COMPENSATION WILL BE PAID TO THE CONTRACTOR FOR COSTS INCURRED BECAUSE OF DAMAGE DONE TO EXISTING FACILITIES BY THE CONTRACTOR'S WORK FORCE, INCLUDING COSTS FOR REPAIRS, WHICH WILL BE CONTRACTOR'S SOLE RESPONSIBILITY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE INTEGRITY OF ALL EXISTING UTILITIES AND TO NOTIFY THE PROJECT ENGINEER OF RECORD (ENGINEER) PROMPTLY OF ANY CONFLICT BETWEEN THE APPROVED PLANS AND THE LOCATION OF ANY EXISTING UTILITIES.

6. THE CONTRACTOR SHALL PROTECT ALL PRIVATE AND PUBLIC UTILITIES FROM DAMAGE RESULTING FROM THE WORK. CONTRACTOR SHALL RESTORE ALL PRIVATE AND PUBLIC PROPERTY DISRUPTED BY THE PROJECT IMMEDIATELY AFTER CONSTRUCTION.

7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING EROSION CONTROL MEASURES THROUGHOUT THE DURATION OF THE PROJECT. EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO ANY CLEARING OR GRADING IN CONFORMANCE WITH THE EROSION & SEDIMENTATION CONTROL PLAN AND THE STORM WATER POLLUTION PREVENTION PLAN (SWPPP). THE SWPPP SHALL BE ONSITE AT ALL TIMES DURING CONSTRUCTION ACTIVITIES.

8. SITE CLEARING SHALL INCLUDE THE LOCATION AND REMOVAL OF ALL ABOVE GROUND AND BURIED DEBRIS AND WASTE THAT MAY BE PRESENT.

9. THE CONTRACTOR SHALL OBTAIN REVOCABLE ENCROACHMENT PERMITS FROM THE CITY OF FERNDALE AND/OR WHATCOM COUNTY PRIOR TO COMMENCING WORK WITHIN THE PUBLIC RIGHT-OF-WAY.

10. THE CONTRACTOR SHALL ATTEND A PRE-CONSTRUCTION MEETING WITH REPRESENTATIVES OF THE CITY OF FERNDALE PUBLIC WORKS DEPARTMENT AND THE ENGINEER A MINIMUM OF THREE (3) WORKING DAYS PRIOR TO THE START OF CONSTRUCTION. THE CITY WILL SCHEDULE THE MEETING.

11. ALL WORK AND MATERIALS SHALL BE SUBJECT TO APPROVAL BY THE CITY OF FERNDALE PUBLIC WORKS DEPARTMENT, REPRESENTATIVES FROM THE CITY OF FERNDALE PUBLIC WORKS DEPARTMENT MUST INSPECT ALL WORK IDENTIFIED ON THE PLANS, BOTH PUBLIC AND PRIVATE. THE CONTRACTOR SHALL CALL AT LEAST 24 HOURS IN ADVANCE TO SCHEDULE INSPECTIONS AS FOLLOW:
    A. PLACEMENT OF TEMPORARY EROSION CONTROL MEASURES.
    B. CONSTRUCTION OF STORMWATER MANAGEMENT FACILITIES.
    C. PLACEMENT OF WATER MAIN AND BACKFILLING OF WATER MAIN TRENCH WITHIN ROAD RIGHTS OF WAY OR IN WATERLINE EASEMENT TO BE DEDICATED TO THE CITY OF FERNDALE.
    D. PLACING OR BACKFILLING OF UNDERGROUND UTILITIES, STORM SEWER AND SANITARY SEWER WITHIN ROAD RIGHTS-OF-WAY, IN EASEMENTS TO BE DEDICATED TO THE CITY OF FERNDALE, OR OTHER PUBLICLY SHARED FACILITIES.
    E. GRADING OF PUBLIC OR PRIVATE ROADWAY AT:
        1. COMPLETION OF EXCAVATION TO SUBGRADE.
        2. COMPLETION OF BALLAST COURSE PLACEMENT
        3. COMPLETION OF CRUSHED SURFACING COURSE PLACEMENT
    F. POURING OF CURB AND GUTTER AND SIDEWALK IN PUBLIC ROADWAY.
    G. ASPHALT PAVING IN PROGRESS IN PUBLIC ROADWAY.
    H. OVERALL INSPECTION FOR FINISHED SHOULDERS, DITCHES, PERMANENT SEEDING AND MONUMENT PLACEMENT.
    I. END OF MAINTENANCE PERIOD

12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ADEQUATE SAFEGUARDS, SAFETY DEVICES, PROTECTIVE EQUIPMENT FLAGGERS, AND ANY OTHER NEEDED ACTIONS TO PROTECT THE LIFE, HEALTH AND SAFETY OF THE PUBLIC, AND TO PROTECT PROPERTY IN CONNECTION WITH THE PERFORMANCE OF WORK COVERED BY THE CONTRACTOR. ANY WORK WITHIN THE TRAVELED RIGHT-OF-WAY THAT MAY INTERRUPT NORMAL TRAFFIC FLOW SHALL REQUIRE AT LEAST ONE FLAGGER FOR EACH LANE OF TRAFFIC AFFECTED. A TRAFFIC CONTROL PLAN SHALL BE SUBMITTED TO THE CITY FOR APPROVAL PRIOR TO PERFORMING THE WORK. ALL SECTIONS OF THE WSDOT SPECS., 1-07.23- TRAFFIC CONTROL, SHALL APPLY.

13. THE CONTRACTOR SHALL INFORM THE ENGINEER AND OBTAIN APPROVAL FROM THE CITY OF FERNDALE PUBLIC WORKS DIRECTOR OF ANY PROPOSED DEVIATION FROM THE APPROVED PLANS PRIOR TO CONSTRUCTION OF THE REVISED IMPROVEMENTS. THE CONTRACTOR SHALL KEEP RECORDS OF ALL DEVIATIONS AND SHALL FORWARD THEM TO THE ENGINEER AND TO THE CITY OF FERNDALE PUBLIC WORKS DEPARTMENT.

14. AS-BUILT DATA SHALL BE PROVIDED TO THE CITY OF FERNDALE UPON COMPLETION OF CONSTRUCTION AND PROVIDED IN CITY OF FERNDALE DATUM - VERTICAL (NGVD 29) AND HORIZONTAL (NAD 83/91). CONTACT THE CITY FOR MORE INFORMATION ON SUBMITTAL REQUIREMENTS.

15. POTHOLING ALL EXISTING UTILITIES IS REQUIRED PRIOR TO CONSTRUCTION TO VERIFY DESIGN FEASIBILITY. THE CITY DOES NOT GUARANTEE AS-BUILT INFORMATION IN THE CITY DATA BASE IS ACCURATE AND WILL NOT BE HELD RESPONSIBLE IF FIELD MODIFICATIONS ARE REQUIRED BECAUSE POTHOLING WAS NOT DONE PRIOR TO DESIGN.

UNDERGROUND UTILITIES CONSTRUCTION:

1. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH THE ENGINEER TO ASSURE ACCURATE AND TIMELY COLLECTION OF ALL REQUIRED AS-BUILT DATA. THIS DATA MUST ACCURATELY REFLECT THE LOCATIONS OF ALL UNDERGROUND UTILITIES, BOTTOM OF PIPE ELEVATIONS, INVERT ELEVATIONS, MANHOLE LOCATIONS, WATER SERVICE TAPS, BLOW-OFF LOCATIONS AND INVERTS OF SERVICE CONNECTIONS (BOTH AT PIPE AND AT PROPERTY LINE), VERTICAL AND HORIZONTAL BENDS, SERVICE BOXES AND METERS, VALVES AND HYDRANTS. CALL THE ENGINEER AT LEAST 48-HOURS BEFORE BURYING UNDERGROUND PIPE TO ASSURE AND FACILITATE REQUIRED AS-BUILT SURVEY.

2. THE CONSTRUCTION OF UNDERGROUND UTILITY LINES SHALL BE SUBJECT TO THE FOLLOWING CRITERIA:
    A. NO MORE THAN 500 FEET OF TRENCH SHALL BE OPENED AT ONE TIME.
    B. WHERE CONSISTENT WITH SAFETY AND SPACE CONSIDERATIONS, EXCAVATED MATERIAL SHALL BE PLACED ON THE UPHILL SIDE OF DITCHES.
    C. TRENCH DEWATERING DEVICES SHALL DISCHARGE INTO SEDIMENT TRAPS OR SEDIMENT PONDS.
    D. WHERE PRACTICAL, INSTALL GRAVITY PIPE UTILITIES PRIOR TO INSTALLATION OF OTHER UTILITIES.

3. UTILITY CONSTRUCTION SHALL BE DONE IN ACCORDANCE WITH THE REQUIREMENTS OF THE COFDS.

4. ALL UTILITY TRENCHES IN THE RIGHT OF WAY SHALL BE BACKFILLED WITH BALLAST PER SECTION 9-03.9(1) WSDOT SPECS.

5. TESTING OF NEW WATER LINES, STORM SEWER SYSTEMS SHALL NOT BE PERFORMED UNTIL ALL OTHER ADJACENT UTILITIES HAVE BEEN INSTALLED.

6. ALL UTILITY TRENCHES SHALL BE BACKFILLED AND COMPACTED TO 95% RELATIVE COMPACTION OR 95% MODIFIED PROCTOR PER TRENCHING DETAIL COFSD SS-15.

7. OPEN CUTTING OF EXISTING ROADWAYS IS ONLY ALLOWED AS APPROVED AND NOTED ON THESE APPROVED PLANS. ANY OPEN CUT SHALL BE RESTORED IN ACCORDANCE WITH THE CITY OF FERNDALE STANDARD DETAIL (COFSD) R-11 AND SS-15.

8. NO PART OF THE DRAINAGE SYSTEM MAY BE COVERED, CONCEALED, OR PUT INTO USE UNTIL IT HAS BEEN INSPECTED, TESTED, AND ACCEPTED BY THE CITY INSPECTOR

EARTHWORK

1. THE CONTRACTOR SHALL REMOVE AND REPLACE ALL EXISTING UN-COMPACTED OR POORLY COMPACTED FILL SOILS WITHIN THE ROAD PRISM AT THE DIRECTION OF THE DESIGNATED LICENSED GEO TECHNICAL ENGINEER.

2. THE CONTRACTOR SHALL EXCAVATE AND GRADE TO THE ALIGNMENT, GRADE AND CROSS-SECTIONS SHOWN IN THE PLANS OR ESTABLISHED BY THE PROJECT ENGINEER OF RECORD.

3. UNSUITABLE MATERIAL FOUND AND NOT FIT FOR USE AS A SUB-GRADE SHALL BE EXCAVATED TO THE BOUNDARIES SET BY THE ENGINEER AND REPLACED WITH A SUITABLE BACKFILL MATERIAL.

4. THE ENGINEER IS REQUIRED TO CERTIFY SUBGRADE, IN WRITING, PRIOR TO PAVING.

5. MATERIAL TESTING LAB IS REQUIRED TO SUBMIT TEST REPORTS TO THE ENGINEER OF RECORD, CONTRACTOR, AND THE CITY OF FERNDALE TO ENSURE PROJECT CERTIFICATION BY THE ENGINEER OF RECORD.

BASE COURSES & CRUSHED SURFACING

1. GRAVEL BASES AND BALLAST MATERIAL GRADATION SHALL MEET THE CURRENT EDITION OF WSDOT SPECS.

2. BALLAST, GRAVEL BASE AND CRUSHED SURFACING SHALL BE COMPACTED TO AT LEAST 95% OF MAXIMUM DRY DENSITY.

3. THE GRADED AND COMPACTED SURFACE OF THE CRUSHED SURFACING TOP COURSE SHALL BE WITHIN ½ INCH OF FINISHED GRADE.

4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL MATERIAL AND COMPACTION TESTING. PRIOR TO IMPORTING OF MATERIAL FOR BASE AND CRUSHED SURFACING TOP COURSE THE CONTRACTOR SHALL PROVIDE EVIDENCE OF SATISFACTORY PASSING GRADING AND DEGRADATION TEST RESULTS TO THE ENGINEER.

STORM DRAINAGE

1. THE FOLLOWING STANDARD DETAILS SHALL BE USED FOR CONSTRUCTION OF STORM DRAIN IMPROVEMENTS:

CATCH BASINS TYPE 1	COFSD ST-1

2. STORM SEWER PIPE HAVING DIAMETERS GREATER THAN 8" SHALL BE CORRUGATED POLYETHYLENE PIPE (CPEP) PER SECTION 7-04 OF THE WSDOT SPECS. ALL OTHER STORM SEWER PIPE SHALL BE PVC UNLESS OTHERWISE SPECIFIED ON PLANS.

3. ALL CATCH BASIN GRATES SHALL INCLUDE THE STAMPING "OUTFALL TO STREAM, DUMP NO POLLUTANTS".

4. CONTROL DENSITY FILL SHALL BE USED IN AREAS WHERE LESS THAN 18" OF COVER IS MAINTAINED OVER THE PROPOSED STORM PIPES (PIPE IS IN ROAD BASE SECTION), AS SHOWN IN THE PLANS. DUCTILE IRON PIPE OR REINFORCED CONCRETE PIPE MAY BE USED FOR STORM PIPES WITH LESS THAN 18" OF COVER IF APPROVED BY THE CITY.

5. COVER OVER PIPES SHALL BE MAINTAINED DURING CONSTRUCTION. DEPTH OF COVER REQUIRED SHALL CONFORM TO THE MANUFACTURER'S RECOMMENDATIONS AND WILL VARY WITH THE VEHICLE LOADS TRAVELING OVER THE PIPE. NO ADDITIONAL COMPENSATION SHALL BE PROVIDED FOR DAMAGE TO PIPE DURING CONSTRUCTION ACTIVITIES.

6. AT THE END OF ALL SITE CONSTRUCTION, THE CONTRACTOR SHALL CLEAN ALL DEBRIS FROM ALL NEW AND AFFECTED CATCH BASINS AND STORMWATER CONVEYANCES. DEBRIS SHALL NOT BE ALLOWED TO ENTER STREAMS OR OFF-SITE STORMWATER SYSTEMS.

7. EACH STORM SEWER STUB SHALL BE CAPPED WITH A WATERTIGHT PLUG. EACH STUB SHALL BE MARKED FOR LOCATION WITH A 2" DIA. WHITE PVC PIPE (MIN. SCHEDULE 40) STENCILED WITH THE WORD "DRAIN" AND THE PIPE INVERT INDICATED. THE LOCATION MARKER SHALL BE CONNECTED TO THE SERVICE STUB BY A #12 COPPER WIRE.

WATER

1. THE FOLLOWING STANDARD DETAILS SHALL BE USED IN CONSTRUCTING WATER SUPPLY SYSTEM IMPROVEMENTS:

PIPE BEDDING	COFSD W-11 (SAME AS COFSD SS-15)
TRENCH BACKFILL	COFSD W-11 (SAME AS COFSD SS-15)
FIRE HYDRANT ASSEMBLY	COFSD W-1
THRUST BLOCKING	COFSD W-2, W-3
WATER SERVICE	COFSD W-5A

2. ALL WORK AND MATERIALS SHALL CONFORM TO THE REQUIREMENTS OF THE CITY OF FERNDALE DEVELOPMENT STANDARDS, SECTIONS 702 AND 705 AND THE MOST RECENT VERSION OF THE WSDOT STANDARD PLANS.

3. ALL WATER MAIN PIPE SHALL BE DUCTILE IRON PER SECTION 9-30.1(1) OF THE WSDOT SPECS., UNLESS OTHERWISE APPROVED BY THE PUBLIC WORKS DIRECTOR.

4. MATERIAL FOR FITTINGS SUCH AS CROSSES, TEES, BENDS, REDUCERS AND SLEEVES SHALL BE DUCTILE IRON. JOINTS SHALL BE M.J., FLANGED OR PUSH-ON JOINTS AND SHALL CONFORM TO SECTION 9-30.2(1) OF THE WSDOT SPECS.

5. CONCRETE BLOCKING SHALL BE AS SPECIFIED IN CITY OF FERNDALE STANDARD DETAILS W-2, W-3 AND W-4, OR AS DIRECTED BY THE PROJECT ENGINEER. BLOCKS SHALL BE INSTALLED AS SPECIFIED IN SECTION 7-09.3(21) OF THE WSDOT SPECS. NO PRE-CAST BLOCKS ARE ALLOWED.

6. CONNECTIONS TO EXISTING WATER MAINS - THE CONTRACTOR MUST NOTIFY THE CITY OF FERNDALE PUBLIC WORKS DIRECTOR OF A PROPOSED CONNECTION AT LEAST FOUR WORKING DAYS IN ADVANCE.

7. ALL HYDROSTATIC TESTING AND DISINFECTION OF WATER MAINS SHALL CONFORM TO SECTION 7-09.3(23) AND SECTION 7-09.3(24) OF THE WSDOT SPECS. HYDROSTATIC TEST PRESSURE FOR WATER MAIN ACCEPTANCE SHALL BE 150 PSI IN EXCESS OF 100 PSI OPERATING PRESSURE FOR THE CITY OF FERNDALE OR 250 PSI. THE HYDROSTATIC TESTING IS TO BE INSPECTED BY THE CITY. THE CONTRACTOR SHALL CALL AT LEAST 24 HOURS IN ADVANCE TO SCHEDULE INSPECTIONS. THE CITY OF FERNDALE LABORATORY SHALL CONDUCT ALL DISINFECTION TESTS AND BACTERIOLOGICAL TESTS. THE PIPE WILL NOT PASS TESTING UNLESS A RESULT OF ZERO BACTERIAL COUNT IS MEASURED 24 HOURS AFTER THE PIPE PASSED HYDROSTATIC TEST AND FLUSHED.

8. BACKFILL SHALL BE BALLAST PER SECTION 9-03.9(1) WSDOT SPECS. IN ALL STREET RIGHTS-OF-WAY, COMPACTED TO MINIMUM 95% RELATIVE COMPACTION. IN UNIMPROVED AREAS, MINIMUM COMPACTION SHALL BE 90% OF RELATIVE COMPACTION.

9. ALL PIPES SHALL HAVE A MINIMUM COVER OF 36" AND A MAXIMUM OF 42" UNLESS OTHERWISE DIRECTED BY THE PUBLIC WORKS DIRECTOR.

10. ALL VALVES SHALL BE EITHER GATE OR BUTTERFLY TYPE VALVES AND SHALL BE INSTALLED WITH SLIP TYPE CAST IRON VALVE BOXES. GATE VALVES SHALL BE USED FOR LINES 2 INCHES THROUGH 10 INCHES IN DIAMETER. GATE VALVE MAY BE USED IN LIEU OF BUTTERFLY VALVE FOR 12" LINES IF APPROVED BY THE CITY. SHORT-BODY VALVES SUITABLE FOR A NON-SHOCK SHUT-OFF PRESSURE OF 130 PSI AND SUITABLE FOR DIRECT BURIAL ARE SPECIFIED. GATE VALVES SHALL BE RESILIENT SEATED IRON-BODY, FULL-BRONZE MOUNTED VALVES CONFORMING TO AWWA C509 AND SUITABLE FOR SERVICE WITH THE TYPE AND CLASS OF PIPE USED. ALL VALVES SHALL HAVE NON-RISING STEMS AND SHALL OPEN COUNTERCLOCKWISE AND SHALL BE EQUIPPED WITH A 2 INCH SQUARE OPERATING NUT. VALVES WILL BE FLANGE OR M.J. JOINTS. VALVE MARKERS SHALL BE LOCATED OUTSIDE OF PAVEMENT SECTIONS.

11. WATER SERVICE TAP INSTALLATIONS SHALL MEET THE REQUIREMENTS OF THE COFSD W-5.

12. FIRE HYDRANTS AND FIRE MAINS MUST CONFORM TO COFDS (COFSD W-1, WSDOT B-19) AND THE FOLLOWING STANDARDS:
    A. FIRE HYDRANTS SHALL HAVE TWO INDIVIDUALLY VALVED 2-1/2" PORTS AND ONE 5-1/4" MAIN VALVE OPENING. A 4-1/2" NST PUMPER NOZZLE AND A 5" STORZ PORT WITH CAP AND AIRCRAFT CABLE SHALL BE SUPPLIED. HYDRANTS SHALL BE M.H. 929T HYDRANTS.
    B. FIRE HYDRANTS SHALL HAVE THE STORZ PORT FACING THE REQUIRED ACCESS AND THE BASE FLANGE OF THE HYDRANT MUST NOT VARY MORE THAN 1 FOOT IN ELEVATION FROM THE GRADE LEVEL OF THE REQUIRED ACCESS. THE LOWEST STEM SHALL BE A MINIMUM OF 14" ABOVE THE GROUND.
    C. IF THE PUBLIC WORKS DIRECTOR DETERMINES THAT FIRE HYDRANTS ARE VULNERABLE TO VEHICULAR DAMAGE, APPROPRIATE HYDRANT GUARD POSTS SHALL BE PROVIDED. NO OBSTRUCTIONS SHALL EXIST WITHIN A 3-FOOT WORKING AREA OF EACH REQUIRED ACCESS. CRASH POSTS SHALL BE 4" CEMENT-FILLED PIPE A MIN. OF 3' IN HEIGHT WITH A MIN. OF 2' OF PIPE BELOW GRADE. HYDRANT SHUTOFF VALVES SHALL BE LOCATED BETWEEN 5' AND 20' FROM THE HYDRANT.
    D. UNDERGROUND SUPPLIES TO FIRE HYDRANTS MUST BE INSPECTED. SUCH INSPECTION SHALL INCLUDE VISUAL INSPECTION OF PIPING AND HYDROSTATIC PRESSURE TESTING TO A MIN. OF 250 PSI. A FLOW TEST WILL BE REQUIRED WHEN INSTALLATION IS COMPLETE.
    E. FIRE HYDRANTS MUST BE MAINTAINED IN AN OPERABLE CONDITION AT ALL TIMES AND MUST BE REPAIRED OR REPLACED WHEN DEFECTIVE. HYDRANTS SHALL BE FULLY OPERABLE BEFORE CONSTRUCTION COMMENCES ABOVE GRADE LEVEL.

ROAD

1. THE FOLLOWING STANDARD DETAILS SHALL BE USED FOR CONSTRUCTION OF THE STANDARD STREET SECTION:

TYPICAL STREET SECTION	COFSD R-4
PCC DRIVEWAYS	COFSD R-6
PCC CURB AND GUTTER	COFSD R-9
PCC SIDEWALKS	COFSD R-12
PCC SIDEWALK RAMPS	WSDOT STD. DETAIL F-40.12-01
	WSDOT STD. DETAIL F-40.15.02
MALLOY RD.	COFSD R-1 3/4 IMPROVEMENT

2. ROADWAY EXCAVATION WITHIN THE ROADWAY PRISM SHALL BE CUT TO A UNIFORM GRADE. THE COMPLETED SUBGRADE SURFACE SHALL NOT VARY MORE THAN 0.05-FOOT FROM THE LOWER EDGE OF A 15-FOOT STRAIGHTEDGE PLACED ON THE SUBGRADE PARALLEL TO THE CENTERLINE UNLESS APPROVED BY THE ENGINEER.

4. HOT MIX ASPHALT WORK SHALL BE DONE IN ACCORDANCE WITH SECTION 5-04 OF THE WDOT SPECS., EXCEPT AS MODIFIED HEREIN. CONNECTION TO EXISTING PAVEMENT SHALL BE TO A STRAIGHT NEATLY-TRIMMED LINE.

5. CRUSHED ROCK SURFACING FOR PAVEMENT SHALL BE IN ACCORDANCE WITH WSDOT SPECS., SECTION 9-03.9(3); BALLAST PER SECTION 9-03.9(1).

6. CEMENT CONCRETE SHALL BE CLASS 3000 (WITH AIR ENTRAINMENT) IN ACCORDANCE WITH WSDOT SPECS., SECTION 6-02.3(2)B.

7. CEMENT CONCRETE SIDEWALK SHALL BE CONSTRUCTED AS SHOWN ON THE PLANS OR AS DESIGNATED BY THE ENGINEER IN ACCORDANCE WITH COFSD R-12.

8. CEMENT CONCRETE DRIVEWAYS SHALL BE 6 INCHES THICK AND CONSTRUCTED WHERE SHOWN ON THE PLANS OR DESIGNATED BY THE ENGINEER IN ACCORDANCE WITH THE COFSD R-6. A 2- INCH LAYER OF 3/4 INCH DRAIN ROCK SHALL BE USED FOR DRIVEWAY BEDDING.

9. CEMENT CONCRETE CURB AND GUTTER SHALL BE CONSTRUCTED WHERE SHOWN ON THE PLANS OR AS DESIGNED BY THE ENGINEER, IN ACCORDANCE WITH WSDOT SPECS., SECTION 8-04 AND COFSD R-8 AND R-9. HANDICAP RAMPS SHALL BE CONSTRUCTED PER WSDOT STD. DETAILS F-40.12-01 & F-40.15-02. WHERE NEW CEMENT CONCRETE CURB AND GUTTER IS TO CONNECT TO EXISTING CURB AND GUTTER, ASSURE THAT NO ABRUPT OFFSETS IN LINE OR GRADE SHALL BE CONSTRUCTED WHICH WILL BE UNSIGHTLY OR IMPEDE FLOW IN THE GUTTER LINE.

10. PAVEMENT:
    A. SOIL RESIDUAL HERBICIDE SHALL BE PLACED WITHIN 24 HOURS OF PAVING.
    B. A TACK COAT OF ASPHALT SHALL BE APPLIED BETWEEN ALL COURSES OF ASPHALT.
    C. ALL PAVEMENT REPAIR SHALL BE SAW-CUT BEFORE REMOVAL. AR-4000W SHALL BE APPLIED TO ALL EDGES OF EXISTING PAVEMENT. WHERE NEWLY CONSTRUCTED PAVING MEETS EXISTING PAVING, THE APPLICANT SHALL PROVIDE A SMOOTH TRANSITION FROM EXISTING TO PROPOSED PAVING. CONTRACTOR SHALL COLD PLANE PER DIMENSIONS SPECIFIED ON THE PLANS, AND INSTALL A MINIMUM 2-FOOT WIDE PETROTAC PAVING FABRIC, OR EQUIVALENT, OVER JOINT BETWEEN PAVING LIFTS.

11. THRU-CURB BASINS AND THRU-CURB INLETS CONFORMING TO THE WSDOT SPECS, SECTION 7-05 SHALL BE CONSTRUCTED AT THE LOW POINT OF THE CURB FLOW LINES AND TO THE LOCATIONS, DIMENSIONS, AND DETAILS AS SHOWN ON THE PLANS OR DESIGNATED BY THE ENGINEER AND COFSD- R-8.

12. TRENCH EXCAVATIONS, BEDDING AND PIPE FOR STORMWATER PIPE LAYING SHALL BE IN ACCORDANCE WITH THE WSDOT SPECS., SECTION 7-08.

13. STORM SEWER PIPE CONSTRUCTION REQUIREMENTS SHALL BE IN ACCORDANCE WITH WSDOT SPECS., SECTION 7-04. LOTS' STORM DRAIN SERVICE LINE SHALL BE 6" PVC PER WSDOT SPECS., SECTION 9-05.1(5)

14. PERFORATED UNDERDRAIN PIPE SHALL MEET THE WSDOT SPECS., 7-01.3(2).

SANITARY SEWER SYSTEMS

1. THE FOLLOWING STANDARD DETAILS SHALL BE USED FOR CONSTRUCTION OF SANITARY SEWER IMPROVEMENTS:

PIPE BEDDING	COFSD SS-1
TRENCH BACKFILL	COFSD SS-15
CLEAN OUT	COFSD SS-5
MANHOLE	WSDOT STD. DETAIL B-15.20-01

2. ALL WORK AND MATERIALS SHALL BE IN ACCORDANCE WITH COFSD, A.P.W.A. STANDARD SPECIFICATIONS, AND WSDOT SPECS. SANITARY SEWER SYSTEM INSTALLATION, BOTH PUBLIC AND PRIVATE, IS SUBJECT TO CITY REVIEW AND APPROVAL.

3. ALL WORK MUST BE INSPECTED TO THE SATISFACTION OF THE CITY OF FERNDALE. 24 HOUR NOTICE MUST BE GIVEN PRIOR TO STARTING WORK. TESTING OF THE SEWER SYSTEM AND ALL CONNECTIONS TO EXISTING MAINS SHALL BE PERFORMED IN THE PRESENCE AND UNDER THE SUPERVISION OF A CITY OF FERNDALE REPRESENTATIVE.

4. SANITARY SEWER MAINS SHALL BE A MINIMUM 8 INCH DIAMETER PVC PIPE CONFORMING TO WSDOT SPECS. 9-05.12(1) AND INSTALLED PER COFDS.

5. SANITARY SEWER PIPE BEDDING SHALL BE PEA GRAVEL PER COFSD SS-1. ALL TRENCHES SHALL BE BACKFILLED WITH BALLAST WITHIN CITY RIGHT OF WAY AND TRAVELED WAYS OUTSIDE OF RIGHT OF WAY (ACCESS EASEMENTS) AND SHALL BE COMPACTED TO A MINIMUM DENSITY OF 95% MODIFIED PROCTOR. USE OF SUITABLE NATIVE BACKFILL OUTSIDE OF TRAVELED WAY SHALL BE SUBJECT TO APPROVAL BY THE CITY.

6. ALL MANHOLES SHALL BE INSTALLED PER WSDOT STD. DETAIL B-15.20-01 AND SHALL BE PRE-CHANNELED. MANHOLE CONES ARE TO BE OFFSET SUCH THAT LADDER RUNGS ARE PARALLEL TO THE FLOW.

7. ALL SIDE SEWERS SHALL BE INSTALLED PER COFSD SS-6, SS-8 OR SS-15, EXCEPT THAT SINGLE SIDE SEWERS SHALL HAVE A MINIMUM DIAMETER OF 6" AND A MINIMUM SLOPE OF 2.0%.

8. CONTRACTOR SHALL EXTEND SEWER STUBS 5 FT BEYOND UTILITY CORRIDOR OR 15 FEET BEYOND RIGHT-OF-WAY LINE.

9. EACH SIDE SEWER STUB SHALL BE CAPPED WITH A WATERTIGHT PLUG. EACH STUB SHALL BE MARKED FOR LOCATION WITH A 2" DIA. WHITE PVC PIPE (MIN. SCHEDULE 40) WITH THE TOP 18" PAINTED GREEN AND STENCILED WITH THE WORD "SEWER" AND THE PIPE INVERT INDICATED. THE LOCATION MARKER SHALL BE CONNECTED TO THE SERVICE STUB BY A #12 COPPER WIRE.

10. SANITARY SEWER SYSTEM REQUIRES CLEANING AND TESTING IN CONFORMANCE WITH WSDOT 7-17.3(2).

11. EXISTING WELL AND SEPTIC MUST BE PROPERLY DECOMMISIONED THROUGH THE WHATCOM COUNTY HEALTH DEPARTMENT. WRITTEN VERIFICATION AND APPROVAL FROM THE HEALTH DEPARTMENT WILL BE REQUIRED PRIOR TO PROJECT ACCEPTANCE.

CALL BEFORE YOU DIG
Call: TOLL FREE
1-800-424-5555

APPROVED
JUL 09 2019
CITY OF FERNDALE
PUBLIC WORKS DEPARTMENT

RECORD DRAWING 7/02/2019

FERNDALE, WASHINGTON
MALLOY TERRACE PUD
PHASE 1 CONSTRUCTION
GENERAL NOTES

00671.002 7/17/19 KB

CASCADE ENGINEERING GROUP, P.S., INC.
119 Grand Avenue, Suite D
Bellingham, Washington 98225
(360) 306-8161

REVISIONS	DATE
CITY COMMENTS	7/25/18
CITY COMMENTS	09/05/18
RECORD INFO	07/02/19

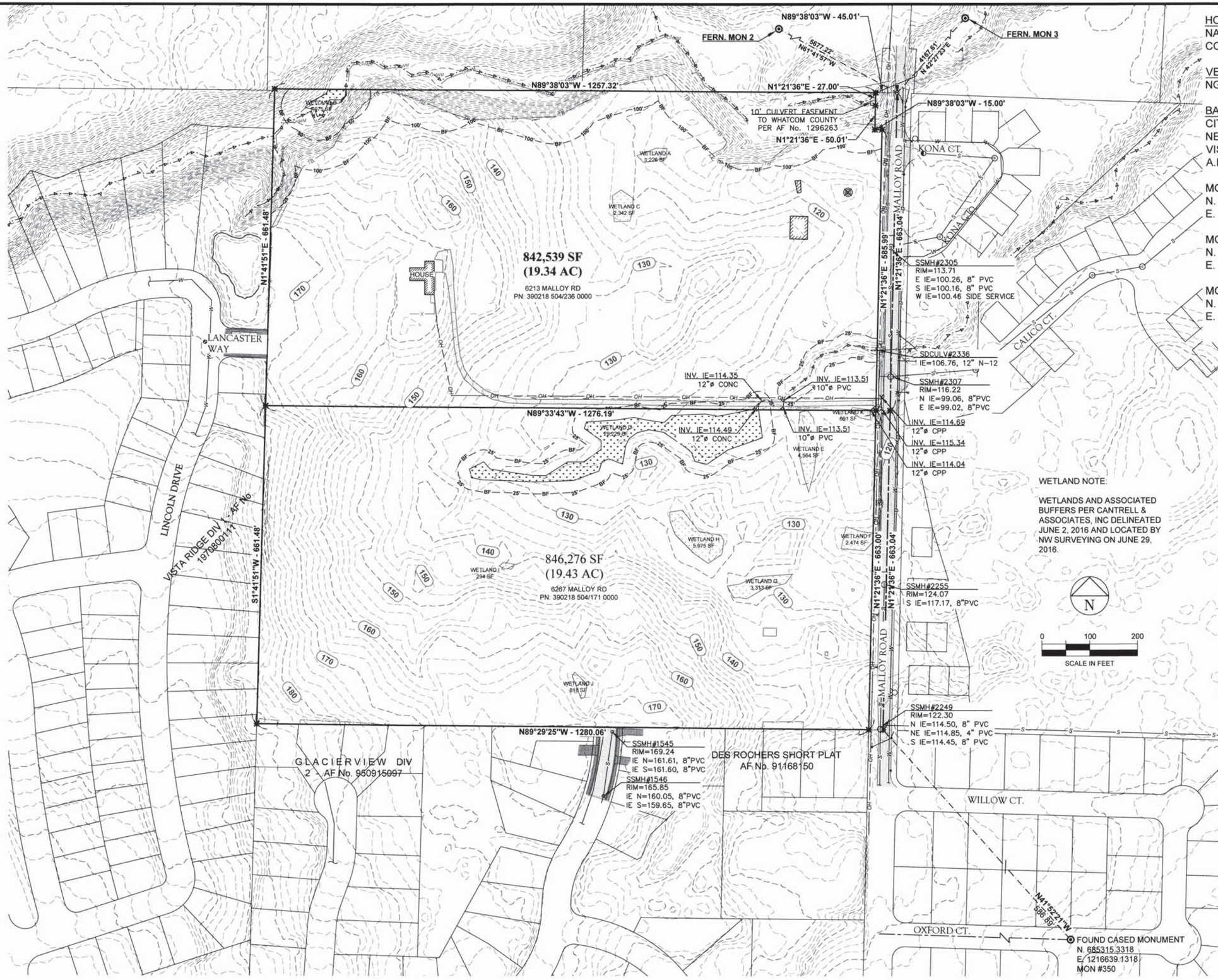
DATE: 2/9/2018
DESIGN:
DRAWN: LCP
CHECKED:

SCALE: AS SHOWN

PROJECT NUMBER:
MDGX0001

SHEET NO.
C02
OF

07/02/2019 4:22PM P:\M\MDGX0001\0400CAD\DWG\Sheets\PHASE 1 CONSTRUCTION PLANS\C02-GENERAL NOTES.PH1.dwg



WETLAND NOTE:

WETLANDS AND ASSOCIATED BUFFERS PER CANTRELL & ASSOCIATES, INC DELINEATED JUNE 2, 2016 AND LOCATED BY NW SURVEYING ON JUNE 29, 2016.

HORIZONTAL DATUM:
NAD 83/91 STATE PLANE COORDINATES

VERTICAL DATUM:
NGVD 29

BASIS OF BEARING:
CITY OF FERNDALE MONUMENT NETWORK
VISTA RIDGE, DIVISION #3 - A.F.No. 2010603969

MON #2
N. 689,769.6355
E. 1,211,280.2412

MON #3
N. 690,152.8799
E. 1,219,092.1339

MON #350
N. 685,315.3318
E. 1,216,639.1318

RECORD DRAWING 7/02/2019

FERNDALE, WASHINGTON

MALLOY TERRACE PUD PHASE 1 CONSTRUCTION

EXISTING CONDITIONS PLAN

00671.003 7/17/19 KB

CRAIG R. PARKINSON STATE OF WASHINGTON 25750 REGISTERED PROFESSIONAL ENGINEER

CASCADE ENGINEERING GROUP, P.S., INC.
119 Grand Avenue, Suite D
Bellingham, Washington 98225
(360) 306-8161

REVISIONS	DATE
CITY COMMENTS	7/25/18
CITY COMMENTS	09/05/18
RECORD INFO	07/02/19

DATE: 2/9/2018
DESIGN:
DRAWN: LCP
CHECKED:

SCALE: AS SHOWN

PROJECT NUMBER:

MDGX0001

SHEET NO.

C03

OF

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APPROVED
JUL 09 2019
CITY OF FERNDALE
PUBLIC WORKS DEPARTMENT

07/02/2019 4:26PM P:\M\MDGX0001\0400CAD\DWG\Sheets\PHASE 1 CONSTRUCTION PLANS\C03-EXISTING CONDITIONS-PH1.dwg

STORMWATER POLLUTION PREVENTION PLAN (SWPPP):

THIS STORMWATER POLLUTION PREVENTION PLAN IS PROVIDED IN GENERAL ACCORDANCE WITH THE TERMS OF THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT FOR CONSTRUCTION ACTIVITIES. THE CONTRACTOR IS ADVISED THAT THE PROJECT AREA MAY DRAIN TO WETLANDS AND/OR STATE WATERS AND THAT THE CONTRACTOR IS RESPONSIBLE TO PROTECT THE RECEIVING WATERS FROM DELETERIOUS EFFECTS OF CONSTRUCTION.

THE CONTRACTOR IS REQUIRED TO HAVE A COPY OF THE SWPPP ONSITE AT ALL TIMES.

THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE EROSION CONTROL MEASURES SHOWN OR DESCRIBED IN THE CONTRACT DOCUMENTS AND ANY ADDITIONAL MEASURES THAT MAY BE REQUIRED BY THE CONTRACTORS MEANS AND METHODS OF CONSTRUCTION AS NEEDED TO CONTROL EROSION AND SEDIMENT AT THE CONSTRUCTION SITE AND TO PREVENT VIOLATION OF SURFACE WATER QUALITY, GROUND WATER QUALITY, OR SEDIMENT MANAGEMENT STANDARDS. EROSION CONTROL MEASURES SHALL BE MAINTAINED THROUGHOUT THE COURSE OF CONSTRUCTION AND UNTIL ALL DISTURBED EARTH IS STABILIZED IN FINISH GRADES.

THE FOLLOWING DESCRIBES HOW THE CONSTRUCTION SWPPP ADDRESSES EACH OF THE 12 REQUIRED ELEMENTS. REFER TO THESE PLANS FOR DRAWINGS OF THE PROJECT, VICINITY MAP, SITE MAP, CONVEYANCE SYSTEMS, EROSION AND SEDIMENT CONTROL MEASURES, AND EROSION AND SEDIMENT CONTROL DETAILS.

ELEMENT #1: PRESERVE VEGETATION/MARK CLEARING LIMITS

1. PRIOR TO BEGINNING LAND DISTURBING ACTIVITIES (INCLUDING CLEARING AND GRADING) CLEARLY MARK ALL CONSTRUCTION LIMITS AS SHOWN ON THE DRAWINGS.

2. SILT FENCE, GEOTEXTILE ENCASED BARRIERS, CONSTRUCTION FENCE, ORANGE PLASTIC FENCE, OR OTHER APPROVED MEASURES MAY BE USED TO MARK THE CLEARING LIMITS AT THE CONTRACTOR'S OPTION.

3. THE DUFF LAYER, NATIVE TOPSOIL, AND NATURAL VEGETATION SHALL BE RETAINED IN AN UNDISTURBED STATE TO THE MAXIMUM DEGREE PRACTICABLE.

SUGGESTED BMPs/BMPs TO BE USED:
BMP C101: PRESERVING NATURAL VEGETATION
BMP C103: HIGH VISIBILITY PLASTIC OR METAL FENCE

ELEMENT #2: ESTABLISH CONSTRUCTION ACCESS

1. CONSTRUCTION VEHICLE ACCESS AND EXIT SHALL UTILIZE EXISTING SITE APPROACH ROADS AND PAVED AREAS TO MINIMIZE TRACKING OF SEDIMENT ONTO PUBLIC ROADS.

2. IF SEDIMENT IS TRACKED OFF SITE, PUBLIC ROADS SHALL BE CLEANED THOROUGHLY AT THE END OF EACH DAY, OR MORE FREQUENTLY DURING WET WEATHER. SEDIMENT SHALL BE REMOVED FROM ROADS BY SHOVELING OR PICKUP SWEEPING AND SHALL BE TRANSPORTED TO A CONTROLLED SEDIMENT DISPOSAL AREA.

3. STREET WASHING IS ALLOWED ONLY AFTER SEDIMENT IS REMOVED AS DESCRIBED ABOVE. STREET WASH WASTEWATER SHALL BE CONTROLLED BY PUMPING BACK ON SITE OR OTHERWISE BE PREVENTED FROM DISCHARGING INTO SYSTEMS TRIBUTARY TO WATERS OF THE STATE.

SUGGESTED BMPs/BMPs TO BE USED:
BMP C105: STABILIZED CONSTRUCTION ENTRANCE
BMP C107: CONSTRUCTION ROAD / PARKING AREA STABILIZATION

ELEMENT #3: CONTROL FLOW RATES

1. PROPERTIES AND WATERWAYS DOWNSTREAM FROM DEVELOPMENT SITES SHALL BE PROTECTED FROM EROSION DUE TO INCREASES IN THE VELOCITY AND PEAK VOLUMETRIC FLOW RATE OF STORMWATER RUNOFF FROM THE PROJECT SITE.

SUGGESTED BMPs/BMPs TO BE USED:
BMP C207: CHECK DAMS
BMP C208: TRIANGULAR SILT DIKE
BMP C235: STRAW WATTLES

ELEMENT #4: INSTALL SEDIMENT CONTROLS

1. THE DUFF LAYER, NATIVE TOPSOIL, AND NATURAL VEGETATION SHALL BE RETAINED IN AN UNDISTURBED STATE TO THE MAXIMUM DEGREE PRACTICABLE.

2. SEDIMENT CONTROL BMPs SHALL BE CONSTRUCTED AS ONE OF THE FIRST STEPS IN GRADING. THESE BMPs SHALL BE FUNCTIONAL BEFORE OTHER LAND DISTURBING ACTIVITIES TAKE PLACE.

3. PRIOR TO LEAVING THE CONSTRUCTION SITE, STORMWATER RUNOFF FROM DISTURBED AREAS SHALL PASS THROUGH AN APPROPRIATE SEDIMENT REMOVAL BMP. RUNOFF FROM FULLY STABILIZED AREAS MAY BE DISCHARGED WITHOUT A SEDIMENT REMOVAL BMP, BUT MUST MEET THE FLOW CONTROL PERFORMANCE STANDARD OF ELEMENT #3.

SUGGESTED BMPs/BMPs TO BE USED:
BMP C232: GRAVEL FILTER BERM
BMP C233: SILT FENCE
BMP C235: STRAW WATTLES
BMP C236: VEGETATIVE FILTRATION

ELEMENT #5: STABILIZE SOILS

1. EXPOSED AND UNWORKED SOILS SHALL BE STABILIZED BY APPLICATION OF EFFECTIVE BMPs THAT PROTECT THE SOIL FROM EROSIVE FORCES OF RAINDROPS, FLOWING WATER, AND WIND.

2. TO PREVENT EROSION, NO SOILS SHALL REMAIN EXPOSED AND UNWORKED FOR MORE THAN THE TIME PERIODS SET FORTH BELOW:

DURING THE WET SEASON (OCTOBER 1 - APRIL 30): 2 DAYS
DURING THE DRY SEASON (MAY 1 - SEPT. 30): 7 DAYS

THIS STABILIZATION REQUIREMENT APPLIES TO ALL SOILS ON SITE, WHETHER AT FINAL GRADE OR NOT. THESE TIMES MAY BE ADJUSTED BY THE LOCAL PERMITTING AUTHORITY IF IT CAN BE SHOWN THAT SITE CONDITIONS OR THE AVERAGE TIME BETWEEN STORM EVENTS JUSTIFIES A DIFFERENT STANDARD.

3. SOILS SHALL BE STABILIZED AT THE END OF THE SHIFT BEFORE A HOLIDAY OR WEEKEND IF NEEDED BASED ON THE WEATHER FORECAST.

4. SOIL STOCKPILES SHALL BE STABILIZED FROM EROSION, PROTECTED WITH SEDIMENT TRAPPING MEASURES, AND WHERE POSSIBLE, BE LOCATED AWAY FROM STORM DRAIN INLETS, WATERWAYS, AND DRAINAGE CHANNELS.

5. APPLICABLE BMPs INCLUDE, BUT ARE NOT LIMITED TO: TEMPORARY AND PERMANENT SEEDING, SODDING, MULCHING, PLASTIC COVERING, EROSION CONTROL FABRICS AND MATTING, SOIL APPLICATION OF POLYACRYLAMIDE (PAM), THE EARLY APPLICATION OF GRAVEL BASE ON AREAS TO BE PAVED AND DUST CONTROL. SELECT SOIL STABILIZATION MEASURES SHALL BE APPROPRIATE FOR THE TIME OF YEAR, SITE CONDITIONS, ESTIMATED DURATION OF USE, AND THE POTENTIAL WATER QUALITY IMPACTS.

6. REMOVE ALL EROSION CONTROL MEASURES AS SOON AS PRACTICAL AFTER ESTABLISHMENT OF UNIFORM GRASS GROWTH OR INSTALLATION OF OTHER PERMANENT STABILIZATION MEASURES. REPAIR ANY DAMAGE TO STABILIZED SURFACES AFTER REMOVAL OF TESC MEASURES.

SUGGESTED BMPs/BMPs TO BE USED:
BMP C120: TEMPORARY AND PERMANENT SEEDING
BMP C121: MULCHING
BMP C122: NETS AND BLANKETS
BMP C123: PLASTIC COVERING
BMP C125: TOPSOILING

ELEMENT #6: PROTECT SLOPES

1. DESIGN, CONSTRUCT, AND PHASE CUT AND FILL SLOPES IN A MANNER THAT WILL MINIMIZE EROSION. APPLICABLE PRACTICES INCLUDE, BUT ARE NOT LIMITED TO, REDUCING CONTINUOUS LENGTH OF SLOPE WITH TERRACING AND DIVERSIONS, REDUCING SLOPE STEEPNESS, AND ROUGHENING SLOPE SURFACES (e.g., TRACK WALKING).

2. OFF-SITE STORMWATER RUN-ON OR GROUNDWATER SHALL BE DIVERTED AWAY FROM SLOPES AND DISTURBED AREAS WITH INTERCEPTOR DIKES, PIPES, AND/OR SWALES. OFF-SITE STORMWATER SHOULD BE MANAGED SEPARATELY FROM STORMWATER GENERATED ON THE SITE.

3. DO NOT CLEAR AND GRUB SLOPES GREATER THAN 4 (HORIZONTAL):1 (VERTICAL) UNLESS FURTHER WORK RESULTING IN STABILIZATION OF THE SLOPES TO BE CLEARED AND GRUBBED IS SCHEDULED.

4. EXCAVATED MATERIAL SHALL BE PLACED ON THE UPHILL SIDE OF TRENCHES, CONSISTENT WITH SAFETY AND SPACE CONSIDERATIONS.

5. CHECK DAMS SHALL BE PLACED AT REGULAR INTERVALS WITHIN CONSTRUCTED CHANNELS THAT ARE CUT DOWN A SLOPE.

SUGGESTED BMPs/BMPs TO BE USED:
BMP C120: TEMPORARY AND PERMANENT SEEDING
BMP C207: CHECK DAMS
BMP C208: TRIANGULAR SILT DIKE

ELEMENT #7: PROTECT DRAIN INLETS

1. ALL STORM DRAIN INLETS OPERABLE DURING CONSTRUCTION AND ALL INLETS WITHIN 200' DOWNSTREAM OF THE PROJECT SITE SHALL BE PROTECTED WITH CATCH BASIN FILTERS SO THAT STORMWATER RUNOFF DOES NOT ENTER THE CONVEYANCE SYSTEM WITHOUT FIRST BEING FILTERED OR TREATED TO REMOVE SEDIMENT. CATCH BASIN FILTERS IN THE ROADWAY WILL BE OIL AND SEDIMENT FILTERS AND CATCH BASIN FILTERS OUTSIDE OF THE ROADWAY WILL BE SEDIMENT FILTERS.

2. APPROACH ROADS SHALL BE KEPT CLEAN. SEDIMENT AND STREET WASH WATER SHALL NOT BE ALLOWED TO ENTER STORM DRAINS WITHOUT PRIOR AND ADEQUATE TREATMENT.

3. INLET PROTECTION DEVICES SHALL BE CLEANED OR REMOVED AND REPLACED WHEN SEDIMENT HAS FILLED ONE-THIRD OF THE AVAILABLE STORAGE (OR WHEN FILLED WITH SIX-INCHES OF SEDIMENT).

SUGGESTED BMPs TO BE USED:
BMP C220: STORM DRAIN INLET PROTECTION

ELEMENT #8: STABILIZE CHANNELS AND OUTLETS

1. ALL TEMPORARY ON-SITE CONVEYANCE CHANNELS SHALL BE DESIGNED, CONSTRUCTED AND STABILIZED TO PREVENT EROSION FROM THE EXPECTED PEAK 10 MINUTE VELOCITY OF FLOW FROM A TYPE 1A, 10-YR, 24-HR FREQUENCY STORM FOR THE DEVELOPED CONDITION. ALTERNATIVELY, THE 10-YR, 1-HR FLOW RATE INDICATED BY AN APPROVED CONTINUOUS RUNOFF MODEL, INCREASED BY A FACTOR OF 1.6, MAY BE USED.

2. STABILIZATION, INCLUDING ARMORING MATERIAL, ADEQUATE TO PREVENT EROSION OF OUTLETS, ADJACENT STREAM BANKS, SLOPES, AND DOWNSTREAM REACHES SHALL BE PROVIDED AT THE OUTLETS OF ALL CONVEYANCE SYSTEMS.

SUGGESTED BMPs/BMPs TO BE USED:
BMP C202: CHANNEL LINING
BMP C209: OUTLET PROTECTION

ELEMENT #9: CONTROL POLLUTANTS

1. ALL POLLUTANTS, INCLUDING WASTE MATERIALS AND DEMOLITION DEBRIS, THAT OCCUR ONSITE SHALL BE HANDLED AND DISPOSED OF IN A MANNER THAT DOES NOT CAUSE CONTAMINATION OF STORMWATER.

2. COVER, CONTAINMENT, AND PROTECTION FROM VANDALISM SHALL BE PROVIDED FOR ALL CHEMICALS, LIQUID PRODUCTS, PETROLEUM PRODUCTS, AND OTHER MATERIALS THAT HAVE THE POTENTIAL TO POSE A THREAT TO HUMAN HEALTH OR THE ENVIRONMENT. ONSITE FUELING TANKS SHALL INCLUDE SECONDARY CONTAINMENT.

3. MAINTENANCE, FUELING, AND REPAIR OF HEAVY EQUIPMENT AND VEHICLES SHALL BE CONDUCTED USING SPILL PREVENTION AND CONTROL MEASURES. CONTAMINATED SURFACES SHALL BE CLEANED IMMEDIATELY FOLLOWING ANY SPILL INCIDENT.

4. WHEEL WASH OR TIRE BATH WASTEWATER SHALL BE DISCHARGED TO A SEPARATE ONSITE TREATMENT SYSTEM OR TO THE SANITARY SEWER WITH LOCAL SEWER DISTRICT APPROVAL.

5. APPLICATION OF FERTILIZERS AND PESTICIDES, SHALL BE CONDUCTED IN A MANNER AND AT APPLICATION RATES THAT WILL NOT RESULT IN LOSS OF CHEMICAL TO STORMWATER RUNOFF. MANUFACTURERS' LABEL REQUIREMENTS FOR APPLICATION RATES AND PROCEDURES SHALL BE FOLLOWED.

6. BMPs SHALL BE USED TO PREVENT OR TREAT CONTAMINATION OF STORMWATER RUNOFF BY pH MODIFYING SOURCES. THESE SOURCES INCLUDE, BUT ARE NOT LIMITED TO: BULK CEMENT, CEMENT KILN DUST, FLY ASH, NEW CONCRETE WASHING AND CURING WATERS, WASTE STREAMS GENERATED FROM CONCRETE GRINDING AND SAWING, EXPOSED AGGREGATE PROCESSES, AND CONCRETE PUMPING AND MIXER IFASHOUT WATERS. PERMITTEES SHALL ADJUST THE pH OF STORMWATER IF NECESSARY TO PREVENT VIOLATIONS OF WATER QUALITY STANDARDS.

7. PERMITTEES SHALL OBTAIN WRITTEN APPROVAL FROM ECOLOGY PRIOR TO USING CHEMICAL TREATMENT, OTHER THAN CARBON DIOXIDE OR DRY ICE TO ADJUST pH.

8. DUST CONTROL BMPs SHALL BE UTILIZED AS REQUIRED TO PREVENT WIND TRANSPORT OF DUST FROM DISTURBED SOIL SURFACES ONTO ROADS, DRAINAGE WAYS, AND SURFACE WATERS.

SUGGESTED BMPs/BMPs TO BE USED:
BMP C140: DUST CONTROL
BMP C151: CONCRETE HANDLING
BMP C152: SAWCUTTING AND SURFACING POLLUTION PREVENTION

ELEMENT #10: CONTROL DEWATERING

1. FOUNDATION, VAULT, AND TRENCH DEWATERING WATER, WHICH HAVE SIMILAR CHARACTERISTICS TO STORMWATER RUNOFF AT THE SITE, SHALL BE DISCHARGED INTO A CONTROLLED CONVEYANCE SYSTEM PRIOR TO DISCHARGE TO A SEDIMENT TRAP OR SEDIMENT POND.

2. CLEAN, NON-TURBID DEWATERING WATER, SUCH AS WELL-POINT GROUND WATER, CAN BE DISCHARGED TO SYSTEMS TRIBUTARY TO, OR DIRECTLY INTO SURFACE WATERS OF THE STATE, AS SPECIFIED IN ELEMENT #8, PROVIDED THE DEWATERING FLOW DOES NOT CAUSE EROSION OR FLOODING OF RECEIVING WATERS. CLEAN DEWATERING WATER SHOULD NOT BE ROUTED THROUGH STORMWATER SEDIMENT PONDS.

3. OTHER DEWATERING DISPOSAL OPTIONS MAY INCLUDE:
a) INFILTRATION.
b) TRANSPORT OFF SITE IN A VEHICLE, SUCH AS A VACUUM FLUSH TRUCK, FOR LEGAL DISPOSAL IN A MANNER THAT DOES NOT POLLUTE STATE WATERS.
c) ECOLOGY APPROVED ON-SITE CHEMICAL TREATMENT OR OTHER SUITABLE TREATMENT TECHNOLOGIES.
d) SANITARY SEWER DISCHARGE WITH LOCAL SEWER DISTRICT APPROVAL, IF THERE IS NO OTHER OPTION.
e) USE OF A SEDIMENTATION BAG (DIRTBAG OR APPROVED EQUAL) WITH OUTFALL TO A DITCH OR SWALE FOR SMALL VOLUMES OF LOCALIZED DEWATERING.

4. HIGHLY TURBID CONTAMINATED DEWATERING WATER FROM CONSTRUCTION EQUIPMENT OPERATION, CLAMSHELL DIGGING, CONCRETE TREMIE POUR, OR WORK INSIDE A COFFERDAM SHALL BE HANDLED SEPARATELY FROM STORMWATER.

ELEMENT #11: MAINTAIN BMPs

1. INSPECT EROSION CONTROL DEVICES ON A WEEKLY BASIS AND AFTER EACH RUNOFF EVENT. MAKE NECESSARY REPAIRS AND MAINTENANCE TO ENSURE CONTINUED PERFORMANCE OF EROSION AND SEDIMENT CONTROLS.

2. WHEN SEDIMENT ACCUMULATION IN SEDIMENTATION STRUCTURES, OTHER THAN INLET PROTECTION DEVICES, HAS REACHED A POINT ONE-THIRD DEPTH OF SEDIMENT STRUCTURE OR DEVICE, OR IF FLOW THROUGH THE DEVICE IS REDUCED BY MORE THAN ONE-THIRD CAPACITY, THE CONTRACTOR SHALL REMOVE AND REPLACE DISPOSABLE DEVICES OR CLEAN AND DISPOSE OF SEDIMENT.

3. TEMPORARY EROSION AND SEDIMENT CONTROL BMPs SHALL BE REMOVED WITHIN 30 DAYS AFTER FINAL SITE STABILIZATION IS ACHIEVED OR AFTER THE TEMPORARY BMPs ARE NO LONGER NEEDED. TRAPPED SEDIMENT SHALL BE REMOVED OR STABILIZED ON SITE. DISTURBED SOILS SHALL BE PERMANENTLY STABILIZED.

ELEMENT #12: MANAGE THE PROJECT

1. PHASING OF CONSTRUCTION:

a) DEVELOPMENT PROJECTS SHALL BE PHASED WHERE FEASIBLE IN ORDER TO PREVENT, TO THE MAXIMUM EXTENT PRACTICABLE, THE TRANSPORT OF SEDIMENT FROM THE DEVELOPMENT SITE DURING CONSTRUCTION. RE-VEGETATION OF EXPOSED AREAS AND MAINTENANCE OF THAT VEGETATION SHALL BE AN INTEGRAL PART OF THE CLEARING ACTIVITIES FOR ANY PHASE.

b) CLEARING AND GRADING ACTIVITIES FOR DEVELOPMENTS SHALL BE PERMITTED ONLY IF CONDUCTED PURSUANT TO AN APPROVED SITE DEVELOPMENT PLAN (e.g., SUBDIVISION APPROVAL) THAT ESTABLISHES APPROVED AREAS OF CLEARING, GRADING, CUTTING AND FILLING. WHEN ESTABLISHING THESE PERMITTED CLEARING AND GRADING AREAS, CONSIDERATION SHOULD BE GIVEN TO MINIMIZING REMOVAL OF EXISTING TREES AND MINIMIZING DISTURBANCE AND COMPACTION OF NATIVE SOILS EXCEPT AS NEEDED FOR BUILDING PURPOSES. THESE PERMITTED CLEARING AND GRADING AREAS AND ANY OTHER AREAS REQUIRED TO PRESERVE CRITICAL OR SENSITIVE AREAS, BUFFERS, NATIVE GROWTH PROTECTION EASEMENTS, OR TREE RETENTION AREAS AS MAY BE REQUIRED BY LOCAL JURISDICTIONS, SHALL BE DELINEATED ON THE SITE PLANS AND THE DEVELOPMENT SITE.

2. SEASONAL WORK LIMITATIONS:
FROM OCTOBER 1 THROUGH APRIL 30, CLEARING, GRADING, AND OTHER SOIL DISTURBING ACTIVITIES SHALL ONLY BE PERMITTED IF SHOWN TO THE SATISFACTION OF THE LOCAL PERMITTING AUTHORITY THAT THE TRANSPORT OF SEDIMENT FROM THE CONSTRUCTION SITE TO RECEIVING WATERS WILL BE PREVENTED THROUGH A COMBINATION OF THE FOLLOWING:

a) SITE CONDITIONS INCLUDING EXISTING VEGETATIVE COVERAGE, SLOPE, SOIL TYPE, AND PROXIMITY TO RECEIVING WATERS; AND
b) LIMITATIONS ON ACTIVITIES AND THE EXTENT OF DISTURBED AREAS; AND
c) PROPOSED EROSION AND SEDIMENT CONTROL MEASURES.

BASED ON THE INFORMATION PROVIDED AND LOCAL WEATHER CONDITIONS, THE LOCAL PERMITTING AUTHORITY MAY EXPAND OR RESTRICT THE SEASONAL LIMITATION ON SITE DISTURBANCE. THE LOCAL PERMITTING AUTHORITY SHALL TAKE ENFORCEMENT ACTION - SUCH AS NOTICE OF VIOLATION, ADMINISTRATIVE ORDER, PENALTY, OR STOP-WORK ORDER UNDER THE FOLLOWING CIRCUMSTANCES:
- IF, DURING THE COURSE OF ANY CONSTRUCTION ACTIVITY OR SOIL DISTURBANCE DURING THE SEASONAL LIMITATION PERIOD, SEDIMENT LEAVES THE CONSTRUCTION SITE CAUSING A VIOLATION OF THE SURFACE WATER QUALITY STANDARD; OR
- IF CLEARING AND GRADING LIMITS OR EROSION AND SEDIMENT CONTROL MEASURES SHOWN IN THE APPROVED PLAN ARE NOT MAINTAINED.

THE FOLLOWING ACTIVITIES ARE EXEMPT FROM THE SEASONAL CLEARING AND GRADING LIMITATIONS:

a) ROUTINE MAINTENANCE AND NECESSARY REPAIR OF EROSION AND SEDIMENT CONTROL BMPs;
b) ROUTINE MAINTENANCE OF PUBLIC FACILITIES OR EXISTING UTILITY STRUCTURES THAT DO NOT EXPOSE THE SOIL OR RESULT IN THE REMOVAL OF THE VEGETATIVE COVER TO SOIL; AND
c) ACTIVITIES WHERE THERE IS ONE HUNDRED PERCENT INFILTRATION OF SURFACE WATER RUNOFF WITHIN THE SITE IN APPROVED AND INSTALLED EROSION AND SEDIMENT CONTROL FACILITIES.

3. COORDINATE WITH UTILITIES AND OTHER CONTRACTORS:
THE PRIMARY PROJECT PROPONENT SHALL EVALUATE, WITH INPUT FROM UTILITIES AND OTHER CONTRACTORS, THE STORMWATER MANAGEMENT REQUIREMENTS FOR THE ENTIRE PROJECT, INCLUDING THE UTILITIES, WHEN IMPLEMENTING THE CONSTRUCTION SWPPP.

4. INSPECTION AND MONITORING:
A) A CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL SHALL BE IDENTIFIED AT THE PRE-CONSTRUCTION MEETING AND SHALL BE ON-SITE OR ON-CALL AT ALL TIMES. EMERGENCY CONTACT INFORMATION SHALL BE KEPT ON-SITE. CERTIFICATION MAY BE THROUGH THE CONSTRUCTION SITE EROSION AND SEDIMENT CONTROL CERTIFICATION PROGRAM OFFERED BY WSDOT, ASSOCIATED GENERAL CONTRACTORS OF WASHINGTON - EDUCATION FOUNDATION, OR ANY EQUIVALENT LOCAL OR NATIONAL CERTIFICATION AND/OR TRAINING PROGRAM.

B) IF INSPECTION AND/OR WATER MONITORING OF SITE RUNOFF REVEALS THAT THE BMPs IDENTIFIED IN THE CONSTRUCTION SWPPP ARE INADEQUATE, THE CONTRACTOR SHALL IMMEDIATELY ADD BMPs TO THE SWPPP AS NECESSARY.

C) SITE LOG BOOK: THE CONTRACTOR MUST MAINTAIN A SITE LOG BOOK THAT CONTAINS A RECORD OF THE IMPLEMENTATION OF THE SWPPP AND OTHER PERMIT REQUIREMENTS, INCLUDING THE INSTALLATION AND MAINTENANCE OF BMPS, SITE INSPECTIONS, AND STORMWATER MONITORING.

D) SITE INSPECTIONS: THE CONTRACTOR MUST INSPECT ALL AREAS DISTURBED BY CONSTRUCTION ACTIVITIES, ALL BMPS, AND ALL STORMWATER DISCHARGE POINTS AT LEAST ONCE EVERY CALENDAR WEEK AND WITHIN 24 HOURS OF ANY DISCHARGE FROM THIS SITE. THE CONTRACTOR MUST EXAMINE STORMWATER VISUALLY FOR THE PRESENC OF SUSPENDED SEDIMENT, TURBIDITY, DISCOLORATION, AND OIL SHEEN. THE EFFECTIVENESS OF BMPS MUST BE EVALUATED AND DETERMINE IF IT IS NECESSARY TO INSTALL, MAINTAIN, OR REPAIR BMPS TO IMPROVE THE QUALITY OF STORMWATER DISCHARGES.

THE CONTRACTOR MUST SUMMARIZE THE RESULTS OF EACH INSPECTION IN AN INSPECTION REPORT OR CHECKLIST AND ENTER THE REPORT/CHECKLIST INTO, OR ATTACH IT TO, THE SITE LOG BOOK. SEE THE DOE'S CONSTRUCTION STORMWATER GENERAL PERMIT, SECTION S.4.B.5. FOR INFORMATION REQUIREMENTS FOR COMPLETING THE INSPECTION FORMS.

E) TURBIDITY/TRANSPARENCY SAMPLING REQUIREMENTS
a. SAMPLING FREQUENCY
- THE CONTRACTOR MUST SAMPLE ALL DISCHARGE LOCATIONS AT LEAST ONCE EVERY CALENDAR WEEK WHEN STORMWATER DISCHARGES FROM THE SITE OR ENTERS ANY ON-SITE SURFACE WATERS OF THE STATE.
- SAMPLES MUST BE REPRESENTATIVE OF THE FLOW AND CHARACTERISTICS OF THE DISCHARGE.
- SAMPLING IS NOT REQUIRED WHEN THERE IS NO DISCHARGE DURING A CALENDAR WEEK.
- SAMPLING IS NOT REQUIRED OUTSIDE OF NORMAL WORKING HOURS OR DURING UNSAFE CONDITIONS.
- IF THE CONTRACTOR IS UNABLE TO SAMPLE DURING A MONITORING PERIOD, THE CONTRACTOR MUST INCLUDE A BRIEF EXPLANATION IN THE MONTHLY DISCHARGE MONITORING REPORT (DMR).
- SAMPLING IS NOT REQUIRED BEFORE CONSTRUCTION ACTIVITY BEGINS.

b. SAMPLING LOCATIONS
- SAMPLING IS REQUIRED AT ALL POINTS WHERE STORMWATER ASSOCIATED WITH CONSTRUCTION ACTIVITY IS DISCHARGED OFF SITE.
- THE CONTRACTOR MUST IDENTIFY ALL SAMPLING POINT(S) ON THE SWPPP SITE MAP AND CLEARLY MARK THESE POINTS IN THE FIELD WITH A FLAG, TAPE, STAKE OR OTHER VISIBLE MARKER.

c. SAMPLING AND ANALYSIS METHODS
- THE CONTRACTOR PERFORMS TURBIDITY ANALYSIS WITH A CALIBRATED TURBIDITY METER (TURBIDIMETER) EITHER ON SITE OR AT AN ACCREDITED LAB. THE CONTRACTOR MUST RECORD THE RESULTS IN THE SITE LOG BOOK IN NEPHELOMETRIC TURBIDITY UNITS (NTU).
- THE CONTRACTOR PERFORMS TRANSPARENCY ANALYSIS ON SITE WITH A 1¾ - INCH DIAMETER, 60 - CENTIMETER (CM) - LONG TRANSPARENCY TUBE. THE CONTRACTOR WILL RECORD THE RESULTS IN THE SITE LOG BOOK IN CENTIMETERS (CM).
- SEE TABLE BELOW FOR MONITORING BENCHMARKS. SEE THE DOE'S CONSTRUCTION STORMWATER GENERAL PERMIT, SECTION S.4.C.5 FOR TURBIDITY/TRANSPARENCY BENCHMARK VALUES AND REPORTING TRIGGERS.

TABLE 4. MONITORING AND REPORTING REQUIREMENTS

PARAMETER	UNIT	ANALYTICAL METHOD	SAMPLING FREQUENCY	BENCHMARK VALUE	PHONE REPORTING TRIGGER VALUE
TURBIDITY	NTU	SM2130 OR EPA 180.1	WEEKLY, IF DISCHARGING	25 NTU	250 NTU
TRANSPARENCY	CM	MANUFACTURER INSTRUCTIONS, OR ECOLOGY GUIDANCE	WEEKLY, IF DISCHARGING	33 CM	6 CM

5. THE CONSTRUCTION SWPPP SHALL BE RETAINED ON-SITE. THE CONTRACTOR'S TESC RECORD OF RAINFALL, TESC MEASURES, AND INSPECTION SHALL BECOME PART OF THE SWPPP. THE CONSTRUCTION SWPPP SHALL BE MODIFIED BY THE CONTRACTOR'S TESC RECORD WHENEVER THERE IS A SIGNIFICANT CHANGE IN THE DESIGN, CONSTRUCTION, OPERATION, OR MAINTENANCE OF ANY BMP.

APPROVED
JUL 09 2019
BY Kevin Renz
CITY OF FERNDALE
PUBLIC WORKS DEPARTMENT

RECORD DRAWING 7/02/2019

FERNDALE, WASHINGTON
MALLOY TERRACE PUD
PHASE 1 CONSTRUCTION
S.W.P.P. NOTES

00671.004 7/17/19 KB

CRAIG D. PARKINSON, STATE OF WASHINGTON, 32278, REGISTERED PROFESSIONAL ENGINEER

CASCADE ENGINEERING GROUP, P.S., INC.
119 Grand Avenue, Suite D
Bellingham, Washington 98225
(360) 306-8161

REVISIONS	DATE
CITY COMMENTS	7/25/18
CITY COMMENTS	09/05/18
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PROJECT NUMBER:
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C04
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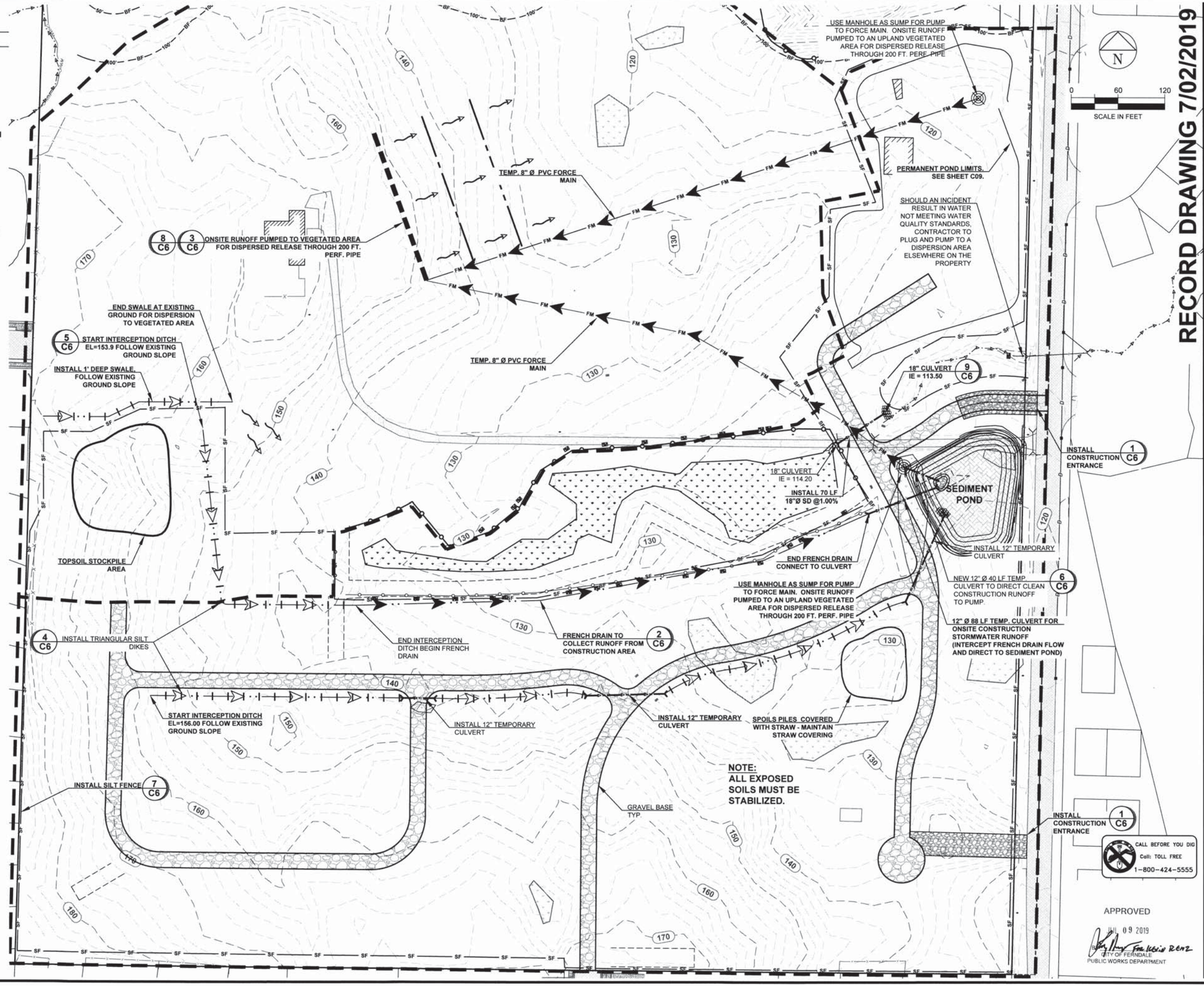
07/02/2019 4:28PM P:\M\MDGX0001\0400CAD\DWG\Sheets\PHASE 1 CONSTRUCTION PLANS\C04-SWPPP Notes-PH1.dwg

S.W.P.P.P. LEGEND

- SILT FENCE
- INTERCEPTOR DITCH
- FRENCH DRAIN
- STORMWATER FORCE MAIN
- TRIANGULAR SILT DIKE
- TEMPORARY CULVERTS
- PUMP LOCATIONS TO TREATMENT LOCATION. INCLUDES TEMPORARY CB FOR SUMP

NOTE:
EXISTING WELL AND SEPTIC TO BE DECOMMISSIONED PRIOR TO COMPLETION OF MALLOY TERRACE PHASE 2 CONSTRUCTION.



RECORD DRAWING 7/02/2019

FERNDALE, WASHINGTON
MALLOY TERRACE PUD
PHASE 1 CONSTRUCTION
S.W.P.P.P.

00671.005 7/17/19 KB

CRAIG R. PARKINSON, STATE OF WASHINGTON, 25785, PROFESSIONAL ENGINEER

CASCADE ENGINEERING GROUP, P.S., INC.
119 Grand Avenue, Suite D
Bellingham, Washington 98225
(360) 306-8161

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CITY COMMENTS	09/05/18
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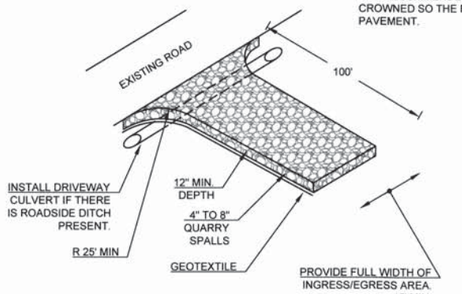
SHEET NO.
C05
OF

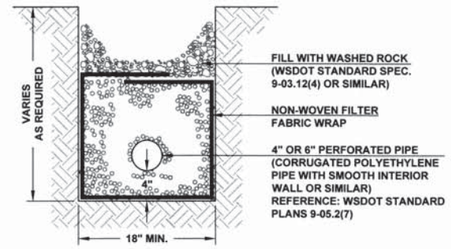
07/02/2019 4:32PM P:\M\MDGX0001\0400CAD\DWG\Sheets\PHASE 1 CONSTRUCTION PLANS\C05-WPPP PLAN-PH1.dwg

DRIVEWAY SHALL MEET THE REQUIREMENTS OF THE PERMITTING AGENCY.

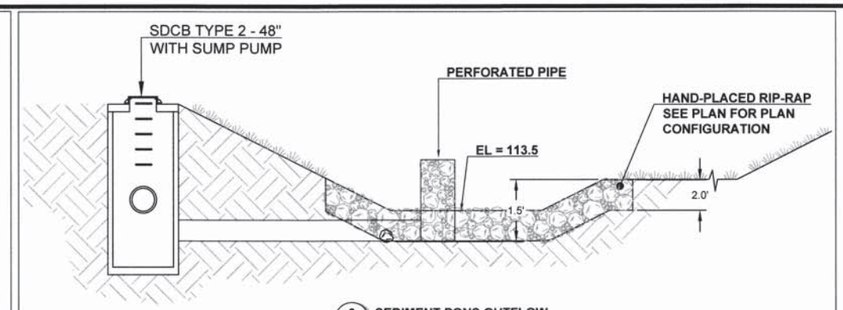
IT IS RECOMMENDED THAT THE ENTRANCE BE CROWNED SO THE RUNOFF DRAINS OFF THE PAVEMENT.



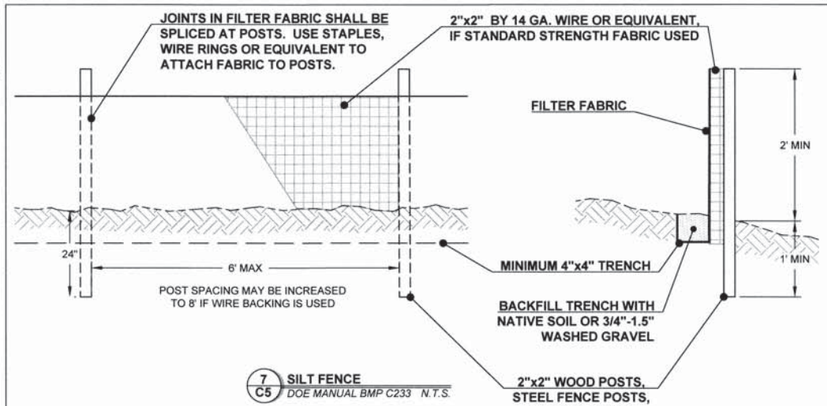
1 / C5 STABILIZED CONSTRUCTION ENTRANCE/EXIT
DOE MANUAL BMP C105 N.T.S.



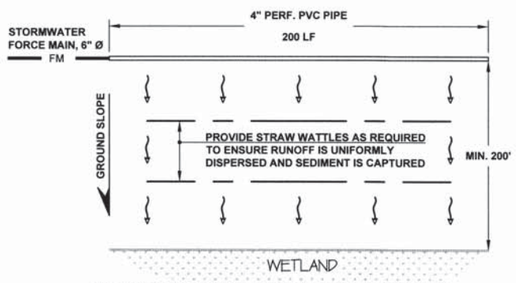
2 / C5 TEMPORARY FRENCH DRAIN
N.T.S.



6 / C5 SEDIMENT PONS OUTFLOW
N.T.S.

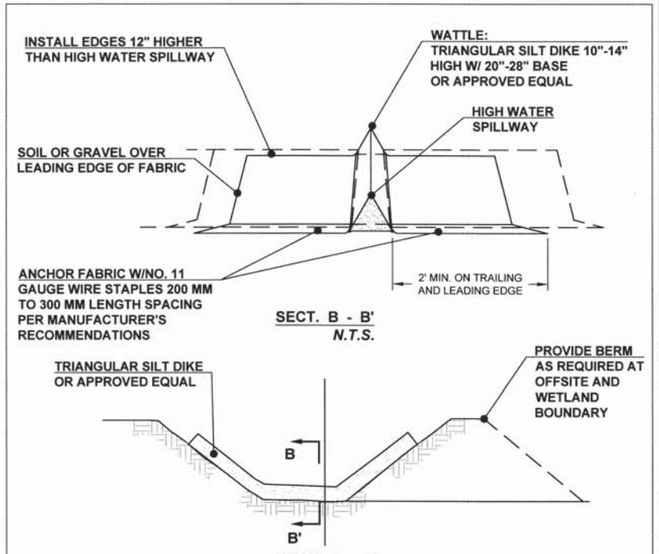


7 / C5 SILT FENCE
DOE MANUAL BMP C233 N.T.S.



DISPERSE FLOW OVER WELL VEGETATED AREA MIN. 200 FT FROM WETLAND BOUNDARY AND OFFSITE DITCHES.

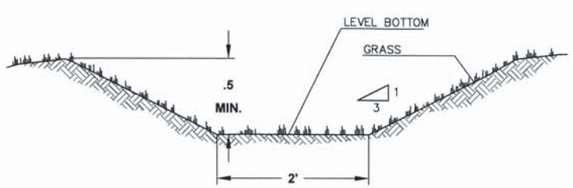
3 / C5 STORMWATER FORCE MAIN DISPERSION HEADER
N.T.S.



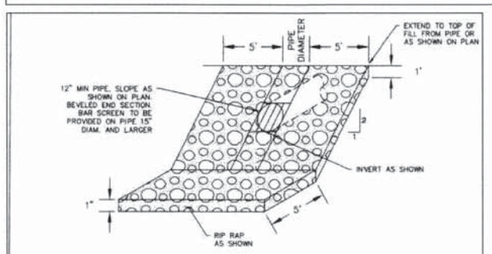
4 / C5 INTERCEPTOR DITCH AND TRIANGULAR DIKE
DOE MANUAL BMP C208 N.T.S.

HYDROSEED TURF MIX*

BOTANICAL NAME:	COMMON NAME:	% WEIGHT	% PURITY	% GERMINATION	TOTAL AREA:
FESTUCA ARUNDINACEA VAR.	DWARF TALL FESCUE	45	98	90	APPROX. 24,160 SF
LOLIUM PERENNE VAR. BARCLAY	DWARF PERENNIAL RYE	30	98	90	
FESTUCA RUBRA	RED FESCUE	20	98	90	
AGROSTIS TENUIS	COLONIAL BENTGRASS	5	98	90	
FERTILIZER:	USE SLOW RELEASE FERTILIZER 10-4-6 (N-P-K) AT A RATE OF 90 LBS PER ACRE.				
MULCH:	USE BONDED FIBER MATRIX AT A MINIMUM RATE OF 3,000 LBS. PER ACRE OF MULCH WITH A 10% TACKIFIER.				



5 / C5 INTERSEPTION DITCH
DOE MANUAL BMP C220 N.T.S.

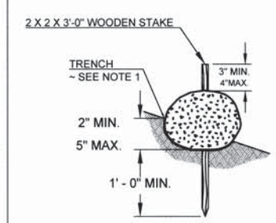


NOTE:
1. THE CITY ENGINEER MAY REQUIRE THAT THE ENGINEER OF RECORD SIZE AND LOCATE SPALLS APPROPRIATELY FOR SITE SPECIFIC CONVEYANCE AND SLOPE PERCENT.

APPROVED
Public Works Director — 8/11/17 Date

AUGUST 4, 2017
CULVERT INLET OUTLET DETAIL
STANDARD DETAIL ST-14
NOT TO SCALE

9 / C5 CULVERT INLET/OUTLET



NOTES: REFERENCE: WSDOT STANDARD PLANS I-30.30-00

1. WATTLES SHALL BE IN ACCORDANCE WITH WSDOT STANDARD SPECIFICATION 9-14.5(5). INSTALL WATTLES ACROSS DITCH PERPENDICULAR TO FLOW AND IN ACCORDANCE WITH WSDOT STANDARD SPECIFICATION 8-01.3(10).
2. SECURELY KNOT EACH END OF WATTLE. ABUT ADJACENT WATTLES TIGHTLY, END TO END, WITHOUT OVERLAPPING THE ENDS.
3. PILOT HOLES MAY BE DRIVEN THROUGH THE WATTLES AND INTO THE SOIL WHEN SOIL CONDITIONS REQUIRE.
4. WATTLES SHALL BE INSPECTED REGULARLY, AND IMMEDIATELY AFTER A RAINFALL PRODUCES RUNOFF, TO ENSURE THEY REMAIN THOROUGHLY ENTRENCHED AND IN CONTACT WITH THE SOIL.
5. PERFORM MAINTENANCE IN ACCORDANCE WITH WSDOT STANDARD SPECIFICATION 8-01.3(15).

8 / C5 STRAW WATTLE
DOE MANUAL BMP C235 NTC

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1-800-424-5555

APPROVED
JUL 09 2019
BY CITY OF FERNDALE
PUBLIC WORKS DEPARTMENT

RECORD DRAWING 7/02/2019

FERNDALE, WASHINGTON
MALLOY TERRACE PUD
PHASE 1 CONSTRUCTION
S.W.P.P.P. DETAILS

00671.006 7/17/19 KB

CASCADE ENGINEERING GROUP, P.S., INC.
119 Grand Avenue, Suite D
Bellingham, Washington 98225
(360) 306-8161

REVISIONS	DATE
CITY COMMENTS	7/25/18
CITY COMMENTS	09/05/18
RECORD INFO	07/02/19

DATE: 2/9/2018
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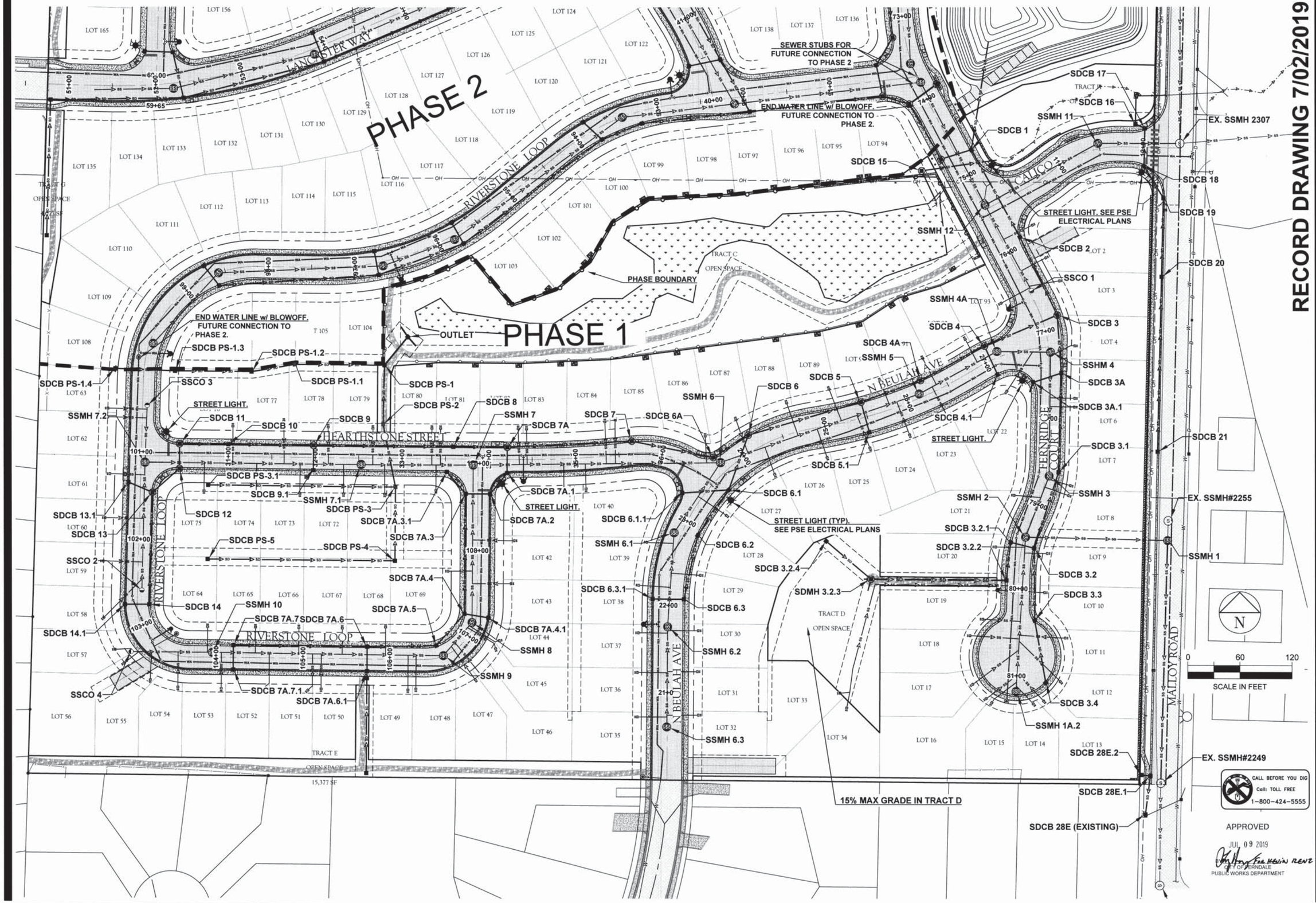

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JUL 09 2019
CITY OF FERNDALE
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RECORD DRAWING 7/02/2019

FERNDALE, WASHINGTON
MALLOY TERRACE PUD
PHASE 1 CONSTRUCTION
OVERVIEW UTILITY & LIGHTING PLAN

00671.007 7/17/19 KB

CASCADE ENGINEERING GROUP, P.S., INC.
119 Grand Avenue, Suite D
Bellingham, Washington 98225
(360) 306-8161

REVISIONS	DATE
CITY COMMENTS	07/25/18
CITY COMMENTS	09/05/19
RECORD INFO	07/02/19

DATE: 2/9/2018
DESIGN:
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SCALE: AS SHOWN

PROJECT NUMBER:
MDGX0001

SHEET NO.
C07
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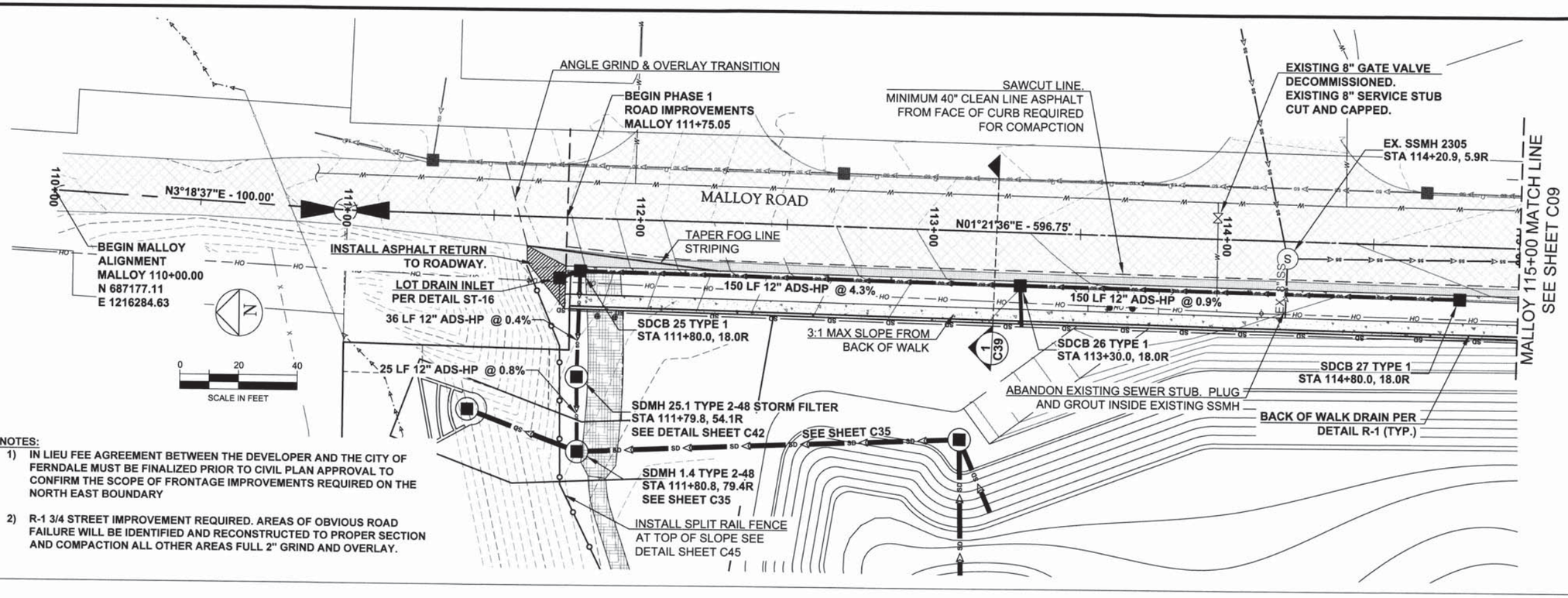
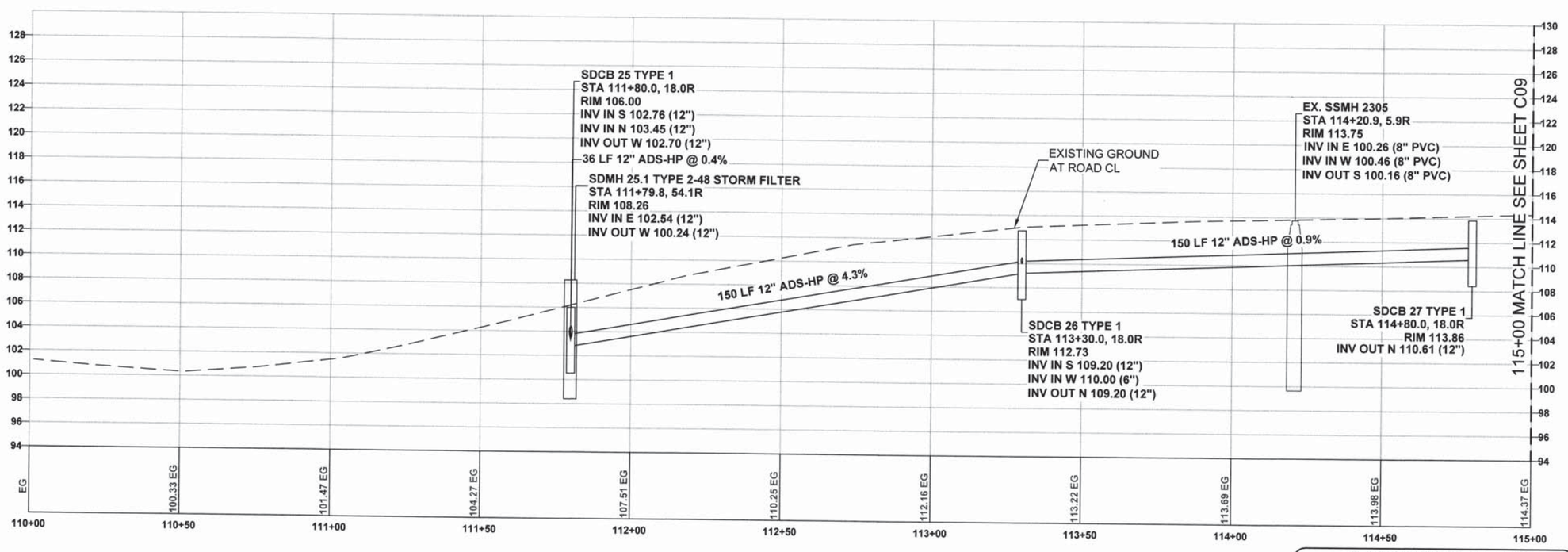


NOTES:

1) IN LIEU FEE AGREEMENT BETWEEN THE DEVELOPER AND THE CITY OF FERNDALE MUST BE FINALIZED PRIOR TO CIVIL PLAN APPROVAL TO CONFIRM THE SCOPE OF FRONTAGE IMPROVEMENTS REQUIRED ON THE NORTH EAST BOUNDARY

2) R-1 3/4 STREET IMPROVEMENT REQUIRED. AREAS OF OBVIOUS ROAD FAILURE WILL BE IDENTIFIED AND RECONSTRUCTED TO PROPER SECTION AND COMPACTION ALL OTHER AREAS FULL 2" GRIND AND OVERLAY.



MALLOY
SCALE: H: 1" = 20', V: 1" = 5'

RECORD DRAWING

RECORD DRAWING NOTE:
AS-BUILT INFORMATION FOR ALL MANHOLE AND CATCH BASIN RIM AND PIPE INVERT ELEVATIONS HAS BEEN PROVIDED BY CONTRACTOR. SURVEYED 5/26/19 TO 6/14/19

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APPROVED
JUL 09 2019
BY: CITY OF FERNDALE
PUBLIC WORKS DEPARTMENT

RECORD DRAWING 7/02/2019

FERNDALE, WASHINGTON

MALLOY TERRACE PUD PHASE 1 CONSTRUCTION

MALLOY ROAD FRONTAGE IMPROVEMENT

00671.008 7/17/19 KB

CRAIG R. PARKINSON
STATE OF WASHINGTON
25798
REGISTERED PROFESSIONAL ENGINEER

CASCADE ENGINEERING GROUP, P.S., INC.
119 Grand Avenue, Suite D
Bellingham, Washington 98225
(360) 306-8161

REVISIONS	DATE
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STORM DRAIN REV.	7/25/18
CITY COMMENTS	09/05/18
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DATE: 2/9/2018
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SCALE: AS SHOWN

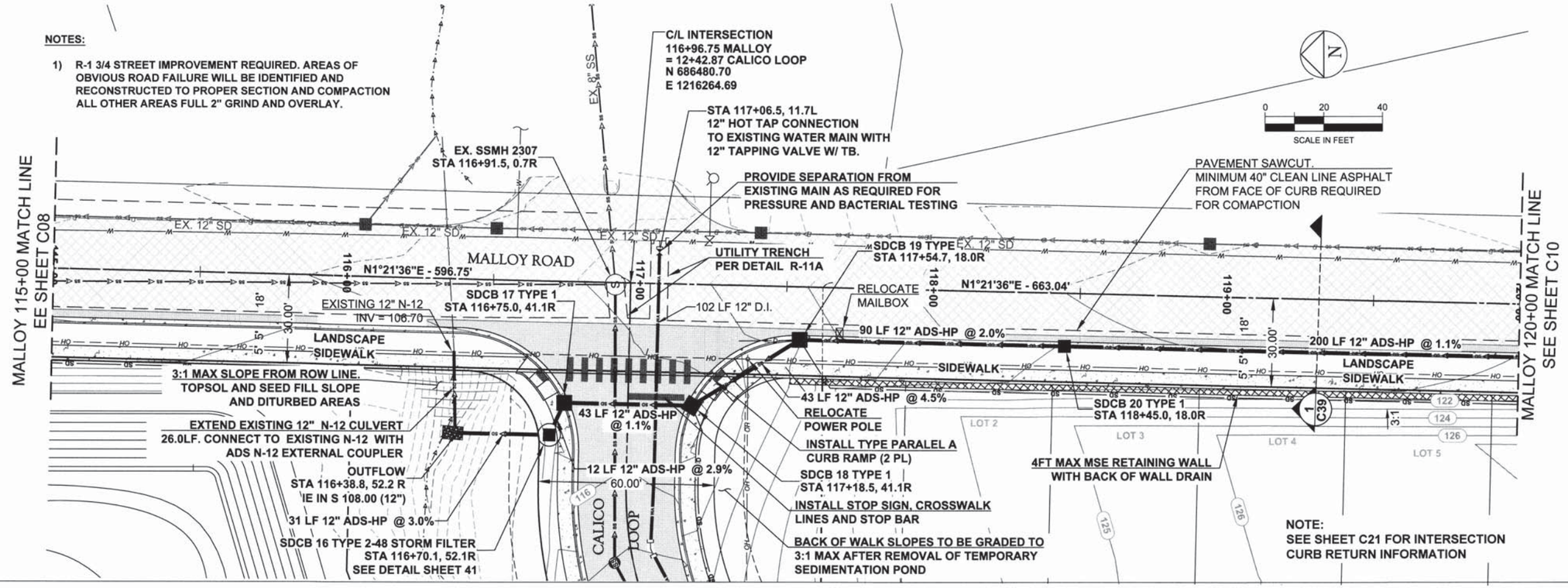
PROJECT NUMBER:
MDGX0001

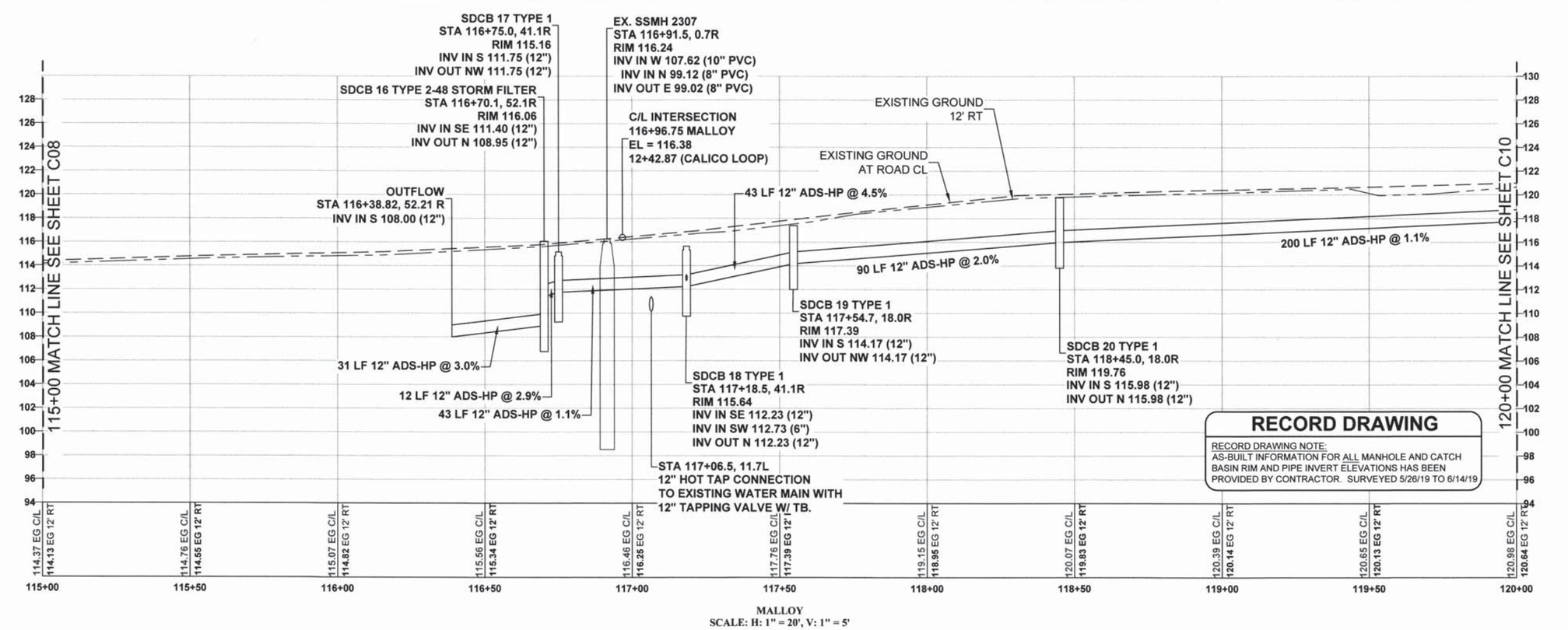
SHEET NO.
C08
OF

07/02/2019 4:46PM P:\MMDGX0001\0400CAD\DWG\Sheets\PHASE 1 CONSTRUCTION PLANS\C08-C10 MALLOY RDSD.dwg

NOTES:

1) R-1 3/4 STREET IMPROVEMENT REQUIRED. AREAS OF OBVIOUS ROAD FAILURE WILL BE IDENTIFIED AND RECONSTRUCTED TO PROPER SECTION AND COMPACTION ALL OTHER AREAS FULL 2" GRIND AND OVERLAY.





MALLOY
SCALE: H: 1" = 20', V: 1" = 5'

RECORD DRAWING

RECORD DRAWING NOTE:
AS-BUILT INFORMATION FOR ALL MANHOLE AND CATCH BASIN RIM AND PIPE INVERT ELEVATIONS HAS BEEN PROVIDED BY CONTRACTOR. SURVEYED 5/26/19 TO 6/14/19

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FERNDALE, WASHINGTON
MALLOY TERRACE PUD
PHASE 1 CONSTRUCTION
MALLOY ROAD FRONTAGE IMPROVEMENT
00671.009 7/17/19 KB

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SHEET NO.
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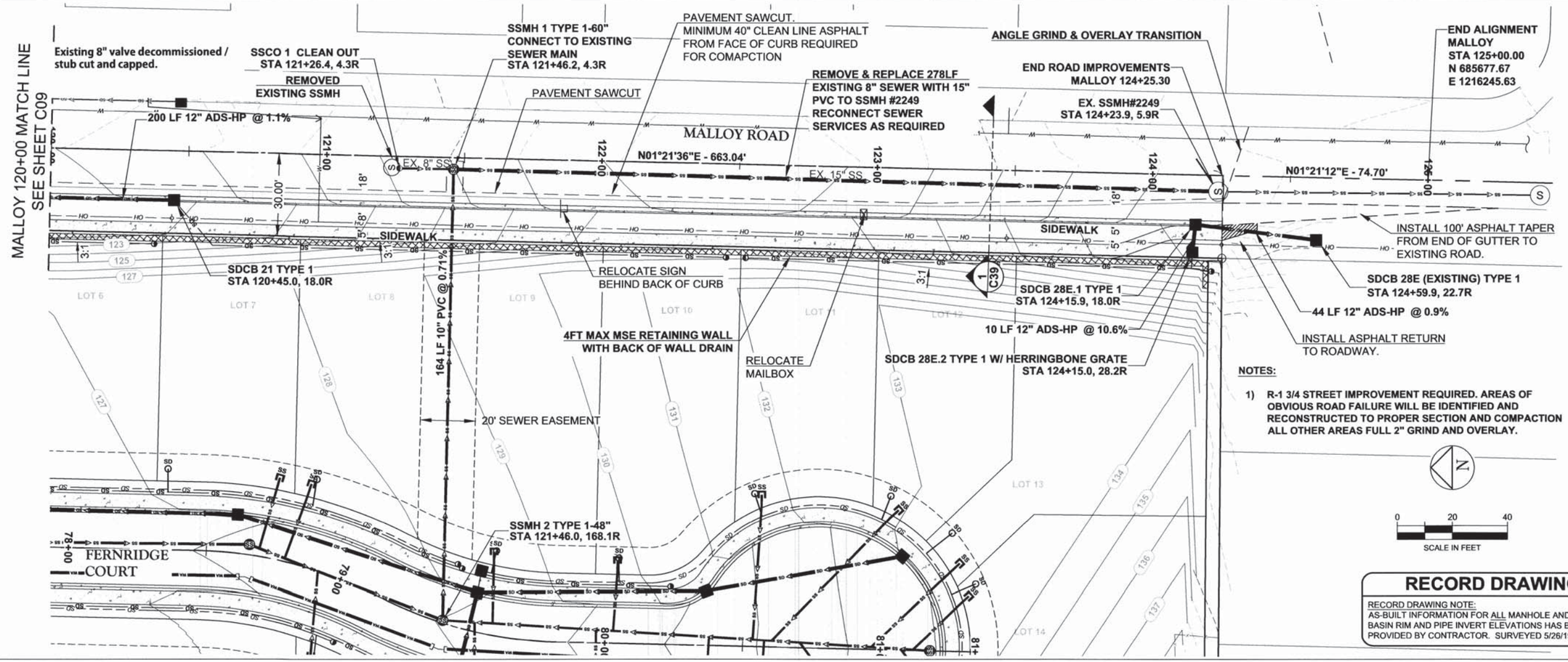
07/02/2019 4:48PM P:\M\MDGX0001\0400CAD\DWG\Sheets\PHASE 1 CONSTRUCTION PLANS\C08-C10 MALLOY RDSD.dwg



NOTES:

1) R-1 3/4 STREET IMPROVEMENT REQUIRED. AREAS OF OBVIOUS ROAD FAILURE WILL BE IDENTIFIED AND RECONSTRUCTED TO PROPER SECTION AND COMPACTION ALL OTHER AREAS FULL 2" GRIND AND OVERLAY.

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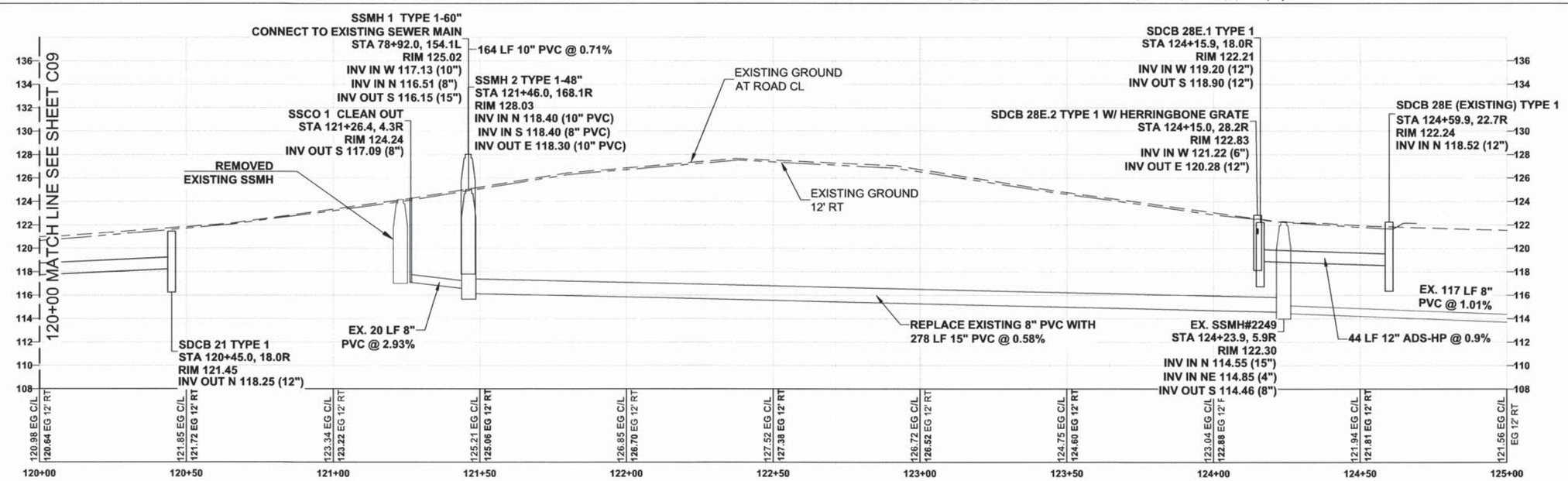

MALLOY
SCALE: H: 1" = 20', V: 1" = 5'

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FERNDALE, WASHINGTON
MALLOY TERRACE PUD
PHASE 1 CONSTRUCTION
MALLOY ROAD FRONTAGE IMPROVEMENT

00671.010 7/17/19 KB

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C10
OF

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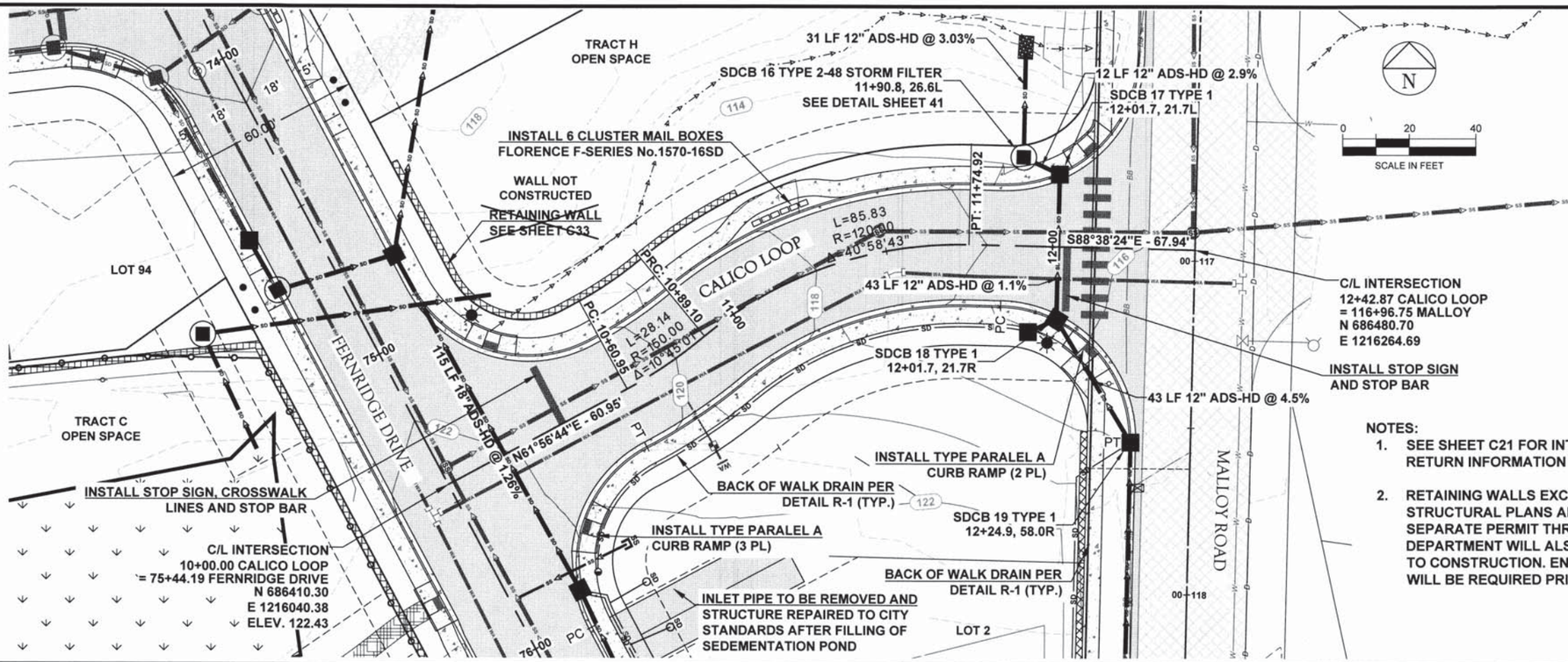
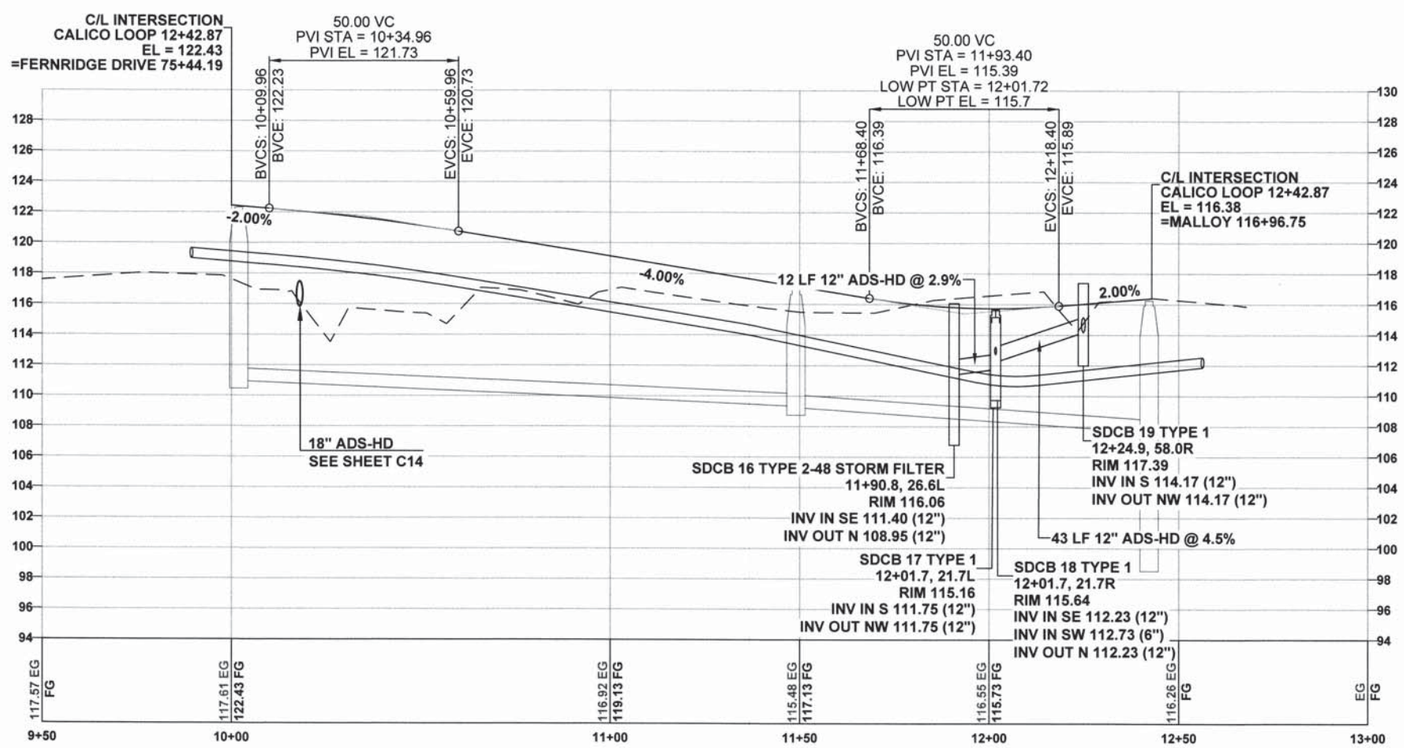


NOTES:

1. SEE SHEET C21 FOR INTERSECTION CURB RETURN INFORMATION
2. RETAINING WALLS EXCEEDING 4' REQUIRE STRUCTURAL PLANS AND ENGINEERING. A SEPARATE PERMIT THROUGH THE BUILDING DEPARTMENT WILL ALSO BE REQUIRED PRIOR TO CONSTRUCTION. ENGINEERS CERTIFICATION WILL BE REQUIRED PRIOR TO FINAL PLAT.



CALICO LOOP
SCALE: H: 1" = 20', V: 1" = 5'

RECORD DRAWING

RECORD DRAWING NOTE:
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APPROVED
JUL 09 2019
CITY OF FERNDALE
PUBLIC WORKS DEPARTMENT

RECORD DRAWING 7/02/2019

FERNDALE, WASHINGTON
MALLOY TERRACE PUD
PHASE 1 CONSTRUCTION
CALICO LOOP AND STORM

00671.011 7/17/19 KB

CRAIG PARKINSON WASHINGTON 25783 PROFESSIONAL ENGINEER

CASCADE ENGINEERING GROUP, P.S., INC.
119 Grand Avenue, Suite D
Bellingham, Washington 98225
(360) 306-8161

REVISIONS	DATE
CITY COMMENTS	7/25/18
REV. PROFILE FG ELEVATIONS	8/14/18
CITY COMMENTS	09/05/18
CITY COMMENTS	09/10/18
RECORD INFO	07/02/19

DATE: 2/9/2018
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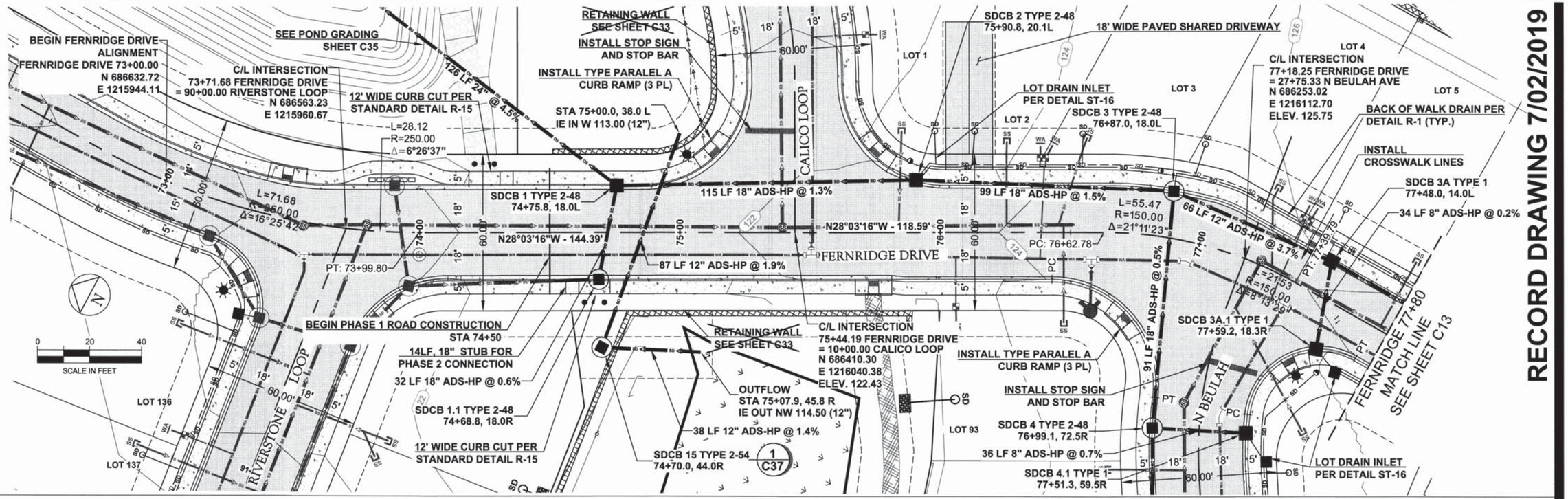
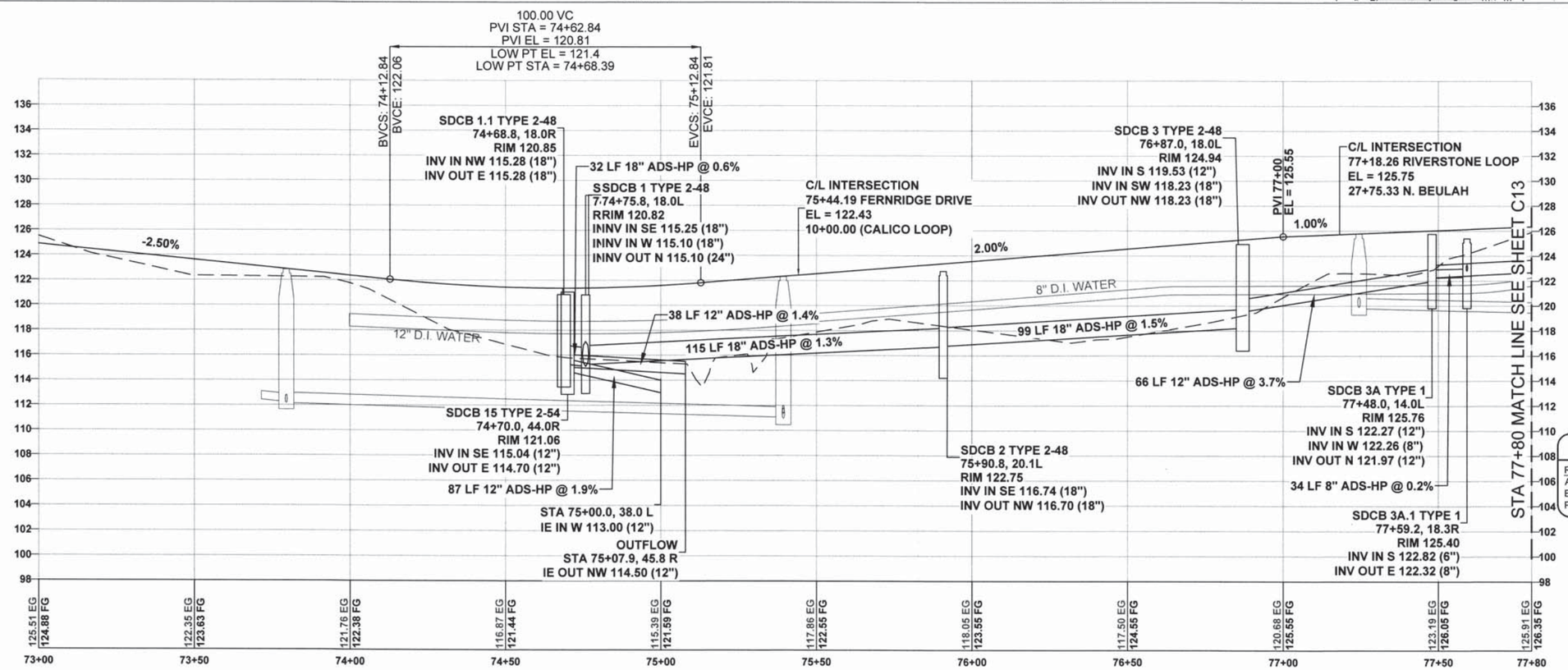
SHEET NO.
C11
OF

07/02/2019 4:51PM P:\M\MDGX0001\0400CAD\DWG\Sheets\PHASE 1 CONSTRUCTION PLANS\C11 CALICO ST-SD.dwg





FERNRIDGE DRIVE
SCALE: H: 1" = 20', V: 1" = 5'

NOTE:
SEE SHEET C21 FOR INTERSECTION CURB RETURN INFORMATION

RECORD DRAWING

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1-800-424-5555

APPROVED
JUL 09 2019
CITY OF FERNDALE
PUBLIC WORKS DEPARTMENT

RECORD DRAWING 7/02/2019

FERNDALE, WASHINGTON
MALLOY TERRACE PUD
PHASE 1 CONSTRUCTION
FERNRIDGE DRIVE STREET AND STORM

00671.012 7/17/19 KB

CASCADE ENGINEERING GROUP, P.S., INC.
119 Grand Avenue, Suite D
Bellingham, Washington 98225
(360) 306-8161

REVISIONS	DATE
CITY COMMENTS	07/25/18
CITTY COMMENTS	09/05/18
CITY COMMENTS	09/10/18
ROAD PROFILE REV	02/28/19
RECORD INFO	07/02/19

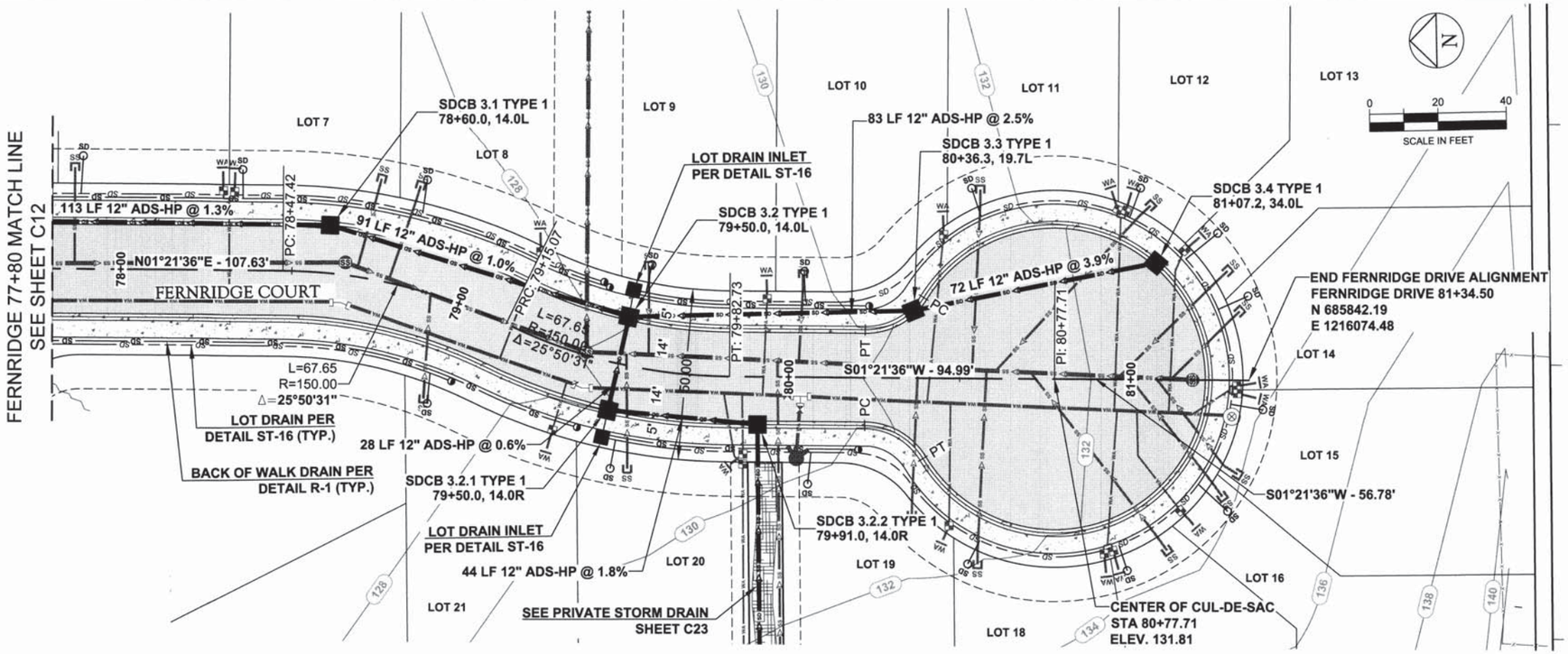
DATE: 2/9/2018
DESIGN:
DRAWN: ADJ
CHECKED:

SCALE: AS SHOWN

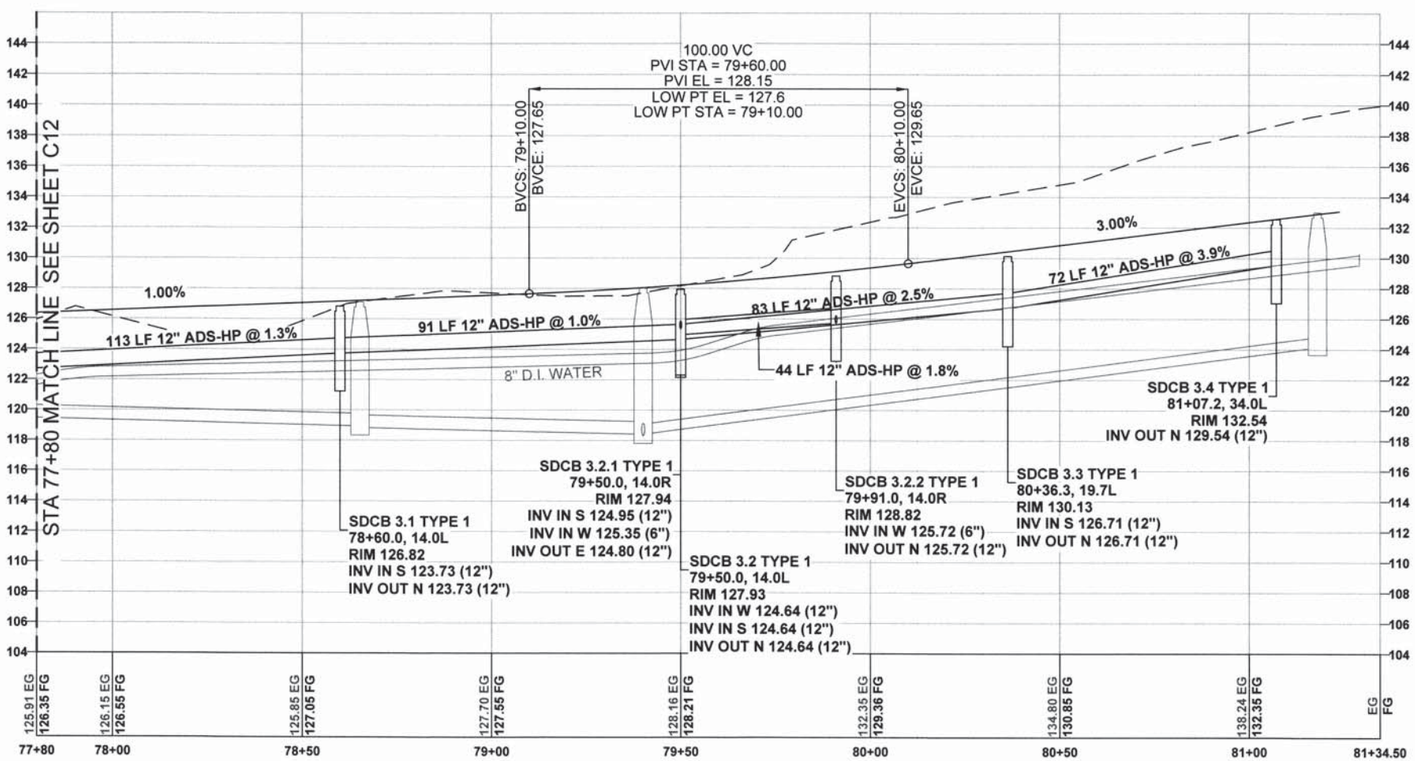
PROJECT NUMBER:
MDGX0001

SHEET NO.
C12
OF

07/02/2019 4:55PM P:\M\MDGX0001\0400CAD\DWG\Sheets\PHASE 1 CONSTRUCTION PLANS\C12-C13 FERNRIDGE DR RDSD.dwg



NOTE:
SEE SHEET C21 FOR INTERSECTION
CURB RETURN INFORMATION



FERNRIDGE DRIVE
SCALE: H: 1" = 20', V: 1" = 5'

RECORD DRAWING 7/02/2019

FERNDALE, WASHINGTON
MALLOY TERRACE PUD
PHASE 1 CONSTRUCTION
FERNRIDGE DRIVE STREET AND STORM

00671.013 7/17/19 KB

CASCADE ENGINEERING GROUP, P.S., INC.
119 Grand Avenue, Suite D
Bellingham, Washington 98225
(360) 306-8161

REVISIONS	DATE
CITY COMMENTS	7/25/18
CITY COMMENTS	09/05/18
RECORD INFO	07/02/19

DATE: 2/9/2018
DESIGN:
DRAWN: ADJ
CHECKED:

SCALE: AS SHOWN

PROJECT NUMBER:
MDGX0001

SHEET NO.
C13
OF

RECORD DRAWING

RECORD DRAWING NOTE:
AS-BUILT INFORMATION FOR ALL MANHOLE AND CATCH BASIN RIM AND PIPE INVERT ELEVATIONS HAS BEEN PROVIDED BY CONTRACTOR. SURVEYED 5/26/19 TO 6/14/19

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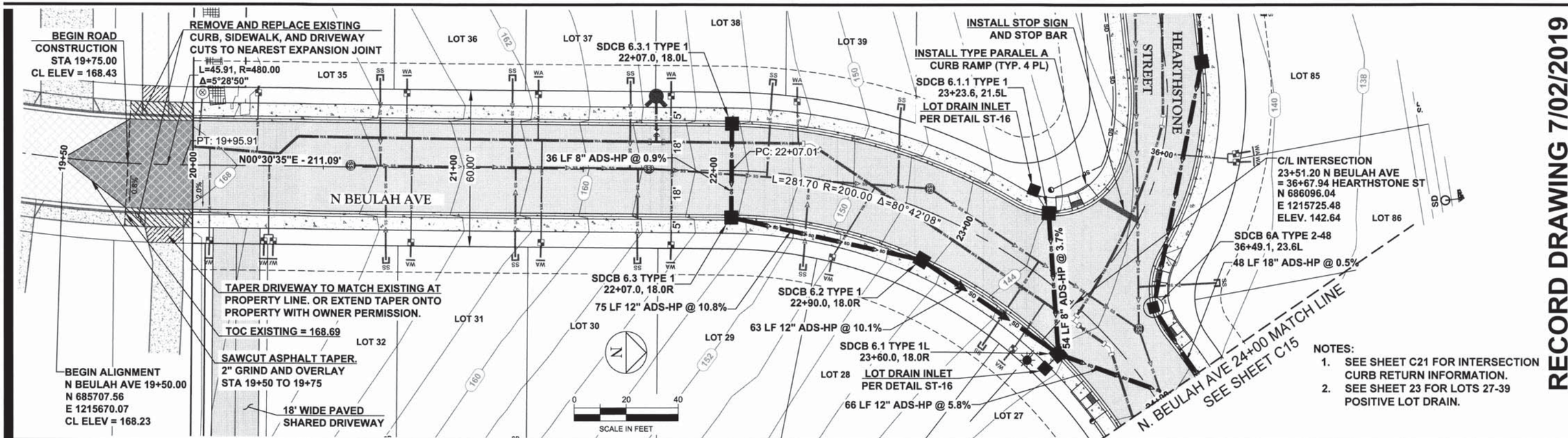
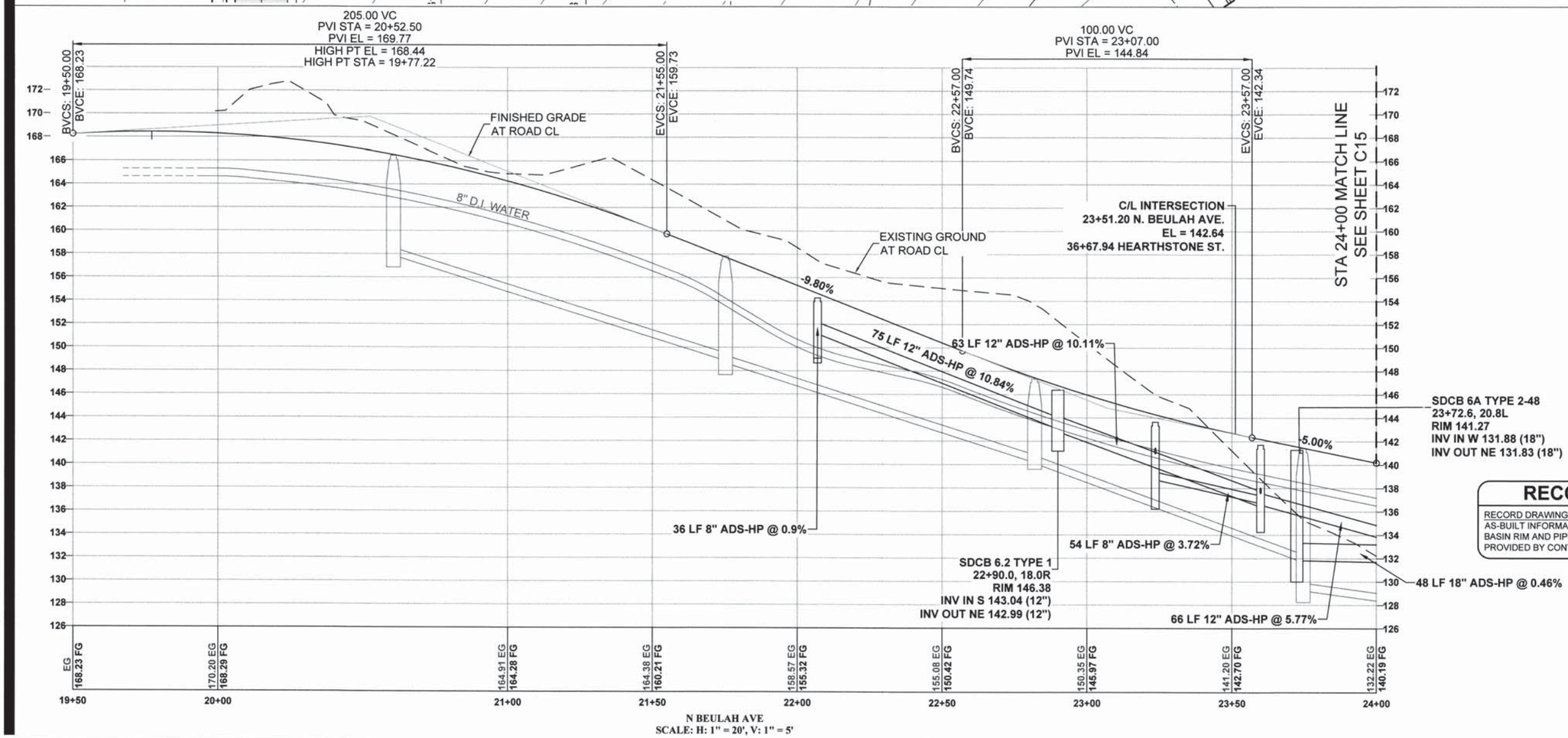
07/02/2019 4:59PM P:\M\MDGX0001\0400CAD\DWG\Sheets\PHASE 1 CONSTRUCTION PLANS\C12-C13 FERNRIDGE DR RD-SD.dwg





RECORD DRAWING 7/02/2019

FERNDALE, WASHINGTON

MALLOY TERRACE PUD PHASE 1 CONSTRUCTION

N. BEULAH STREET AND STORM

00671.014 7/17/19 KB

CASCADE ENGINEERING GROUP, P.S., INC.
119 Grand Avenue, Suite D
Bellingham, Washington 98225
(360) 306-8161

REVISIONS	DATE
CITY COMMENTS	7/25/18
VERTICAL ALIGN.	7/25/18
REV. PROFILE FG ELEVATIONS	8/14/18
CITY COMMENTS	09/05/18
CITY COMMENTS	09/10/18
RECORD INFO	07/02/19

DATE: 2/9/2018
DESIGN:
DRAWN: LCP
CHECKED:

SCALE: AS SHOWN

PROJECT NUMBER:

MDGX0001

SHEET NO.

C14

OF

RECORD DRAWING

RECORD DRAWING NOTE:
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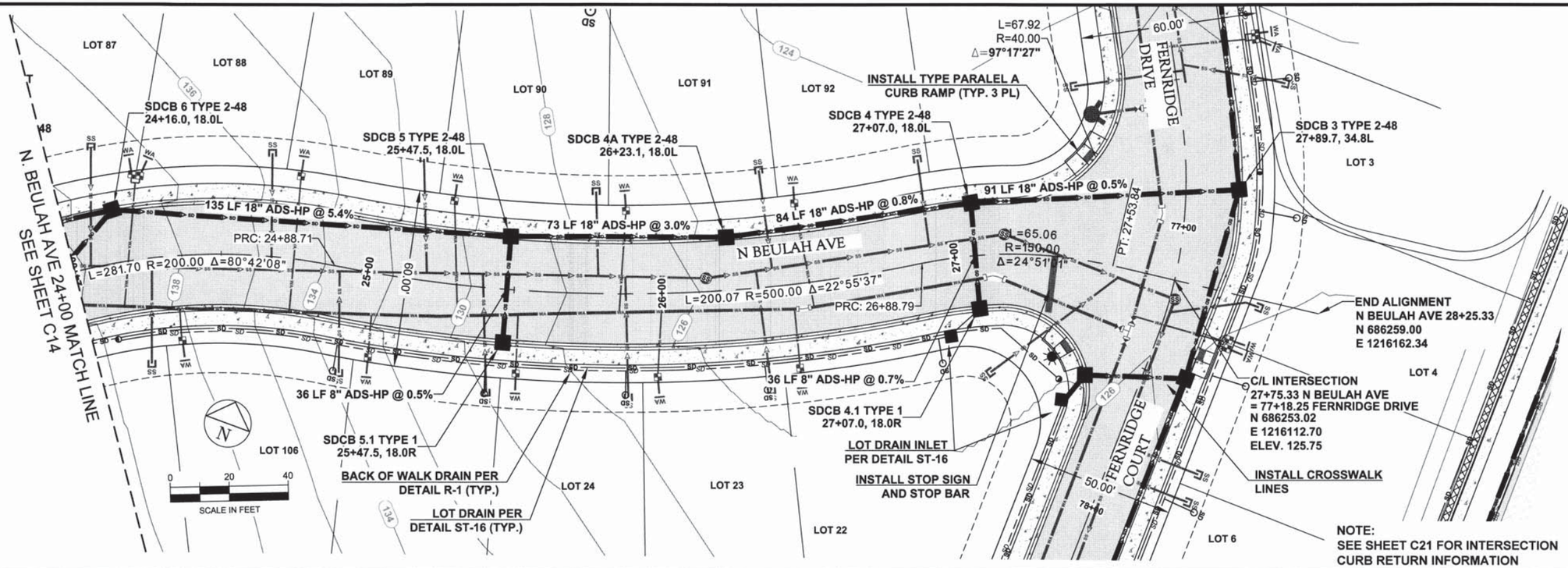
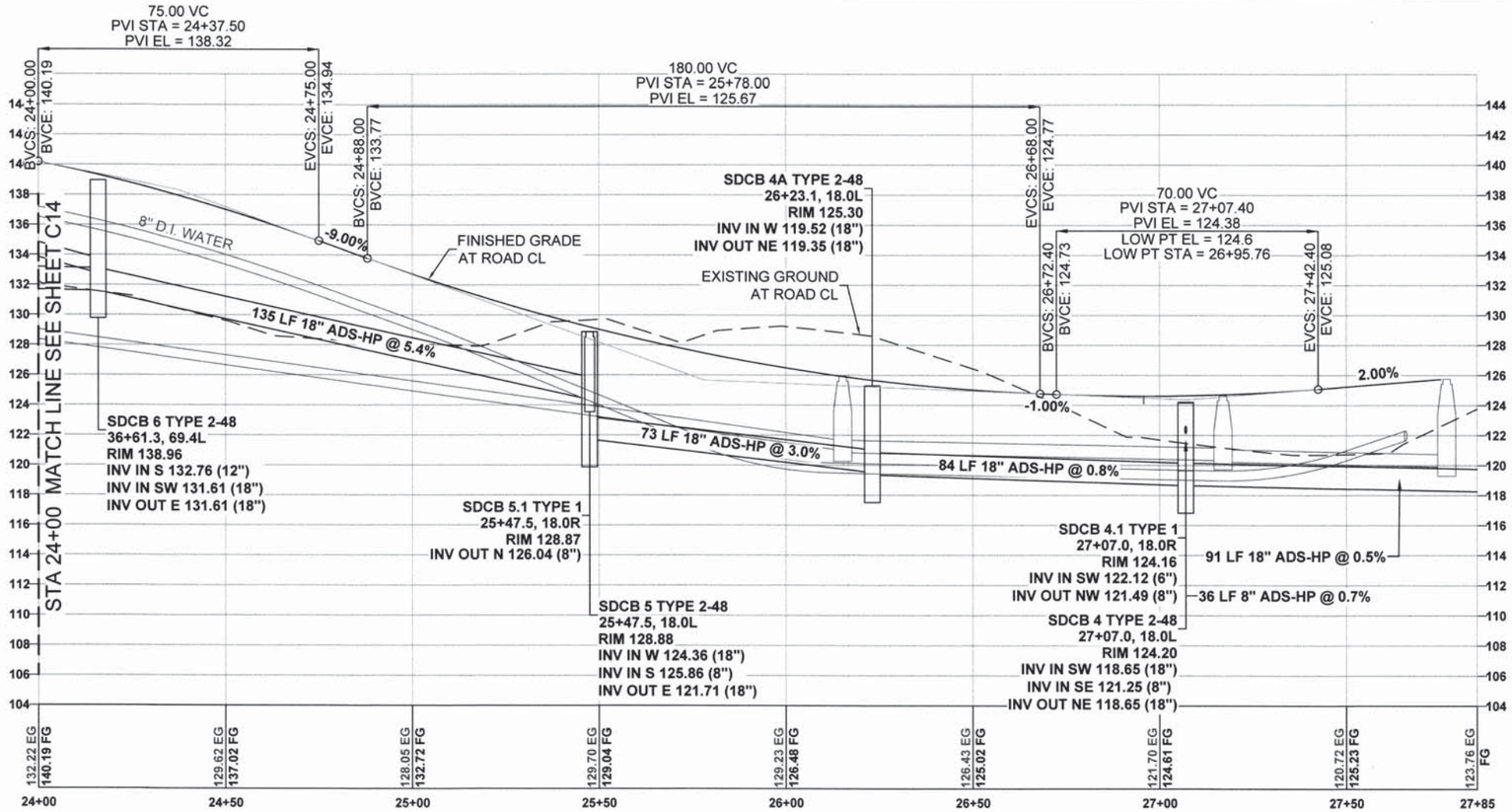
07/08/2019 4:44PM P:\M\MDGX0001\0400CAD\DWG\Sheets\PHASE 1 CONSTRUCTION PLANS\C14-C15 BEULAH RD\SD.dwg





RECORD DRAWING 7/02/2019

FERNDALE, WASHINGTON

MALLOY TERRACE PUD
PHASE 1 CONSTRUCTION

N. BEULAH STREET AND STORM
CITY COMMENTS
00671.015 7/17/19 KB

CASCADE ENGINEERING GROUP, P.S., INC.
119 Grand Avenue, Suite D
Bellingham, Washington 98225
(360) 306-8161

REVISIONS	DATE
CITY COMMENTS	7/25/18
REV. PROFILE FG ELEVATIONS	8/14/18
CITY COMMENTS	09/05/18
RECORD INFO	07/02/19

DATE: 2/9/2018
DESIGN:
DRAWN: ADJ
CHECKED:

SCALE: AS SHOWN

PROJECT NUMBER:

MDGX0001

SHEET NO.

C15

OF

RECORD DRAWING

RECORD DRAWING NOTE:
AS-BUILT INFORMATION FOR ALL MANHOLE AND CATCH BASIN RIM AND PIPE INVERT ELEVATIONS HAS BEEN PROVIDED BY CONTRACTOR. SURVEYED 5/26/19 TO 6/14/19

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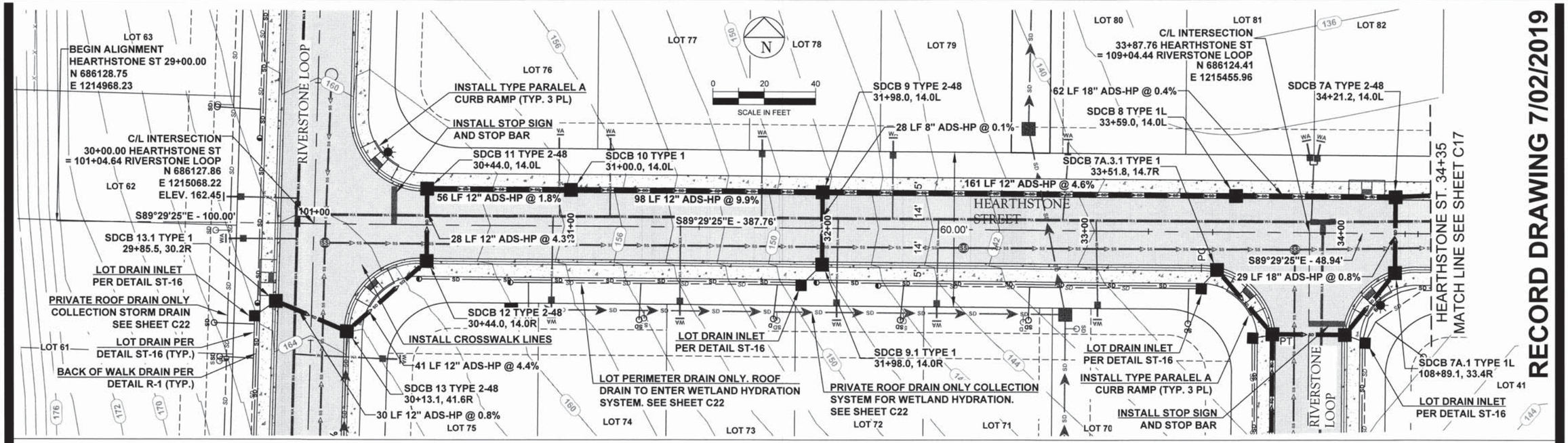
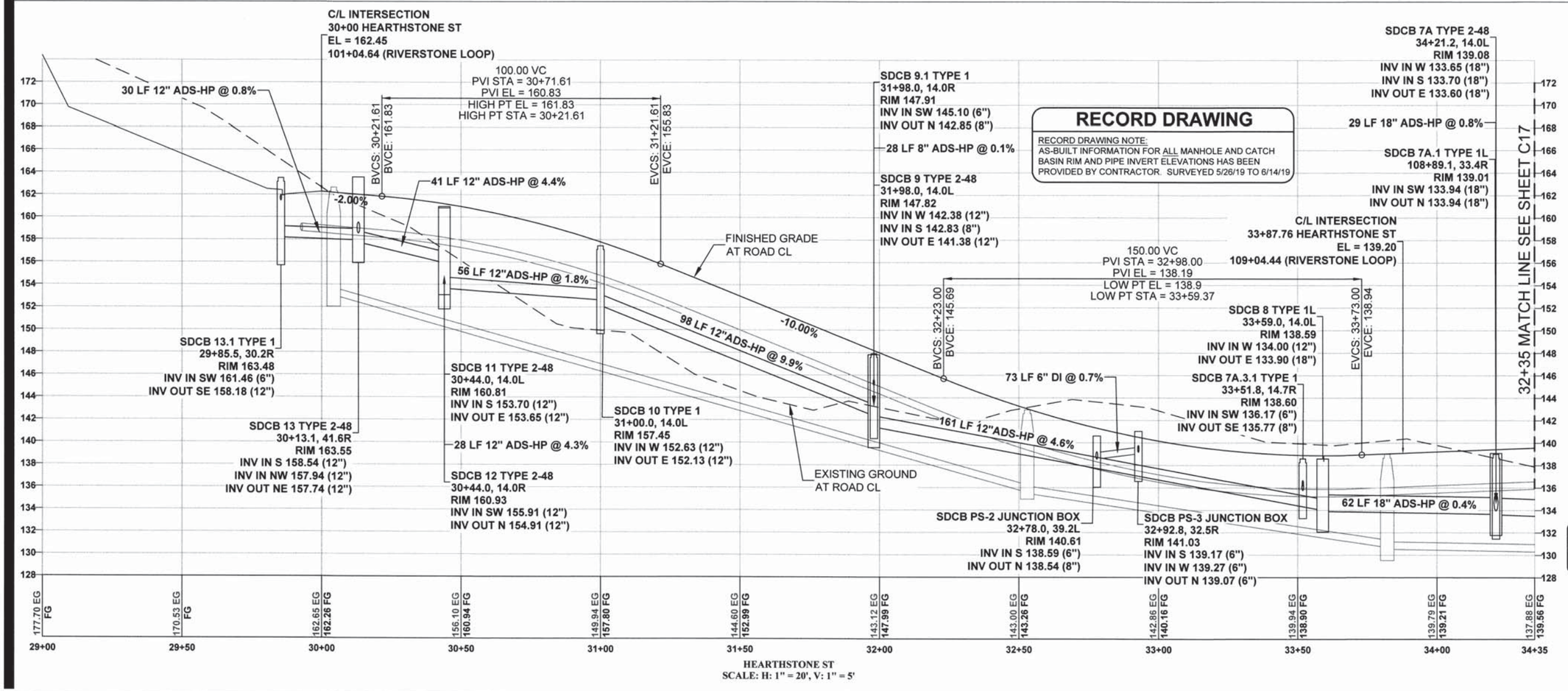
JUL 09 2019
CITY OF FERNDALE
PUBLIC WORKS DEPARTMENT

07/03/2019 9:03AM P:\M\MDGX0001\0400CAD\DWG\Sheets\PHASE 1 CONSTRUCTION PLANS\C14-C15 BEULAH RD-SD.dwg





RECORD DRAWING

RECORD DRAWING NOTE:
AS-BUILT INFORMATION FOR ALL MANHOLE AND CATCH BASIN RIM AND PIPE INVERT ELEVATIONS HAS BEEN PROVIDED BY CONTRACTOR. SURVEYED 5/26/19 TO 6/14/19

RECORD DRAWING 7/02/2019

FERNDALE, WASHINGTON

MALLOY TERRACE PUD PHASE 1 CONSTRUCTION

HEARTHSTONE ST. STREET AND STORM

00671.016 7/17/19 KB

CRAIG R. PARKINSON, STATE OF WASHINGTON, REGISTERED PROFESSIONAL ENGINEER

CASCADE ENGINEERING GROUP, P.S., INC.
119 Grand Avenue, Suite D
Bellingham, Washington 98225
(360) 306-8161

REVISIONS	DATE
CITY COMMENTS	7/25/18
CITY COMMENTS	09/05/18
RECORD INFO	07/02/19

DATE: 2/09/2018
DESIGN:
DRAWN: LCP
CHECKED:

SCALE: AS SHOWN

PROJECT NUMBER:

MDGX0001

SHEET NO.

C16

OF

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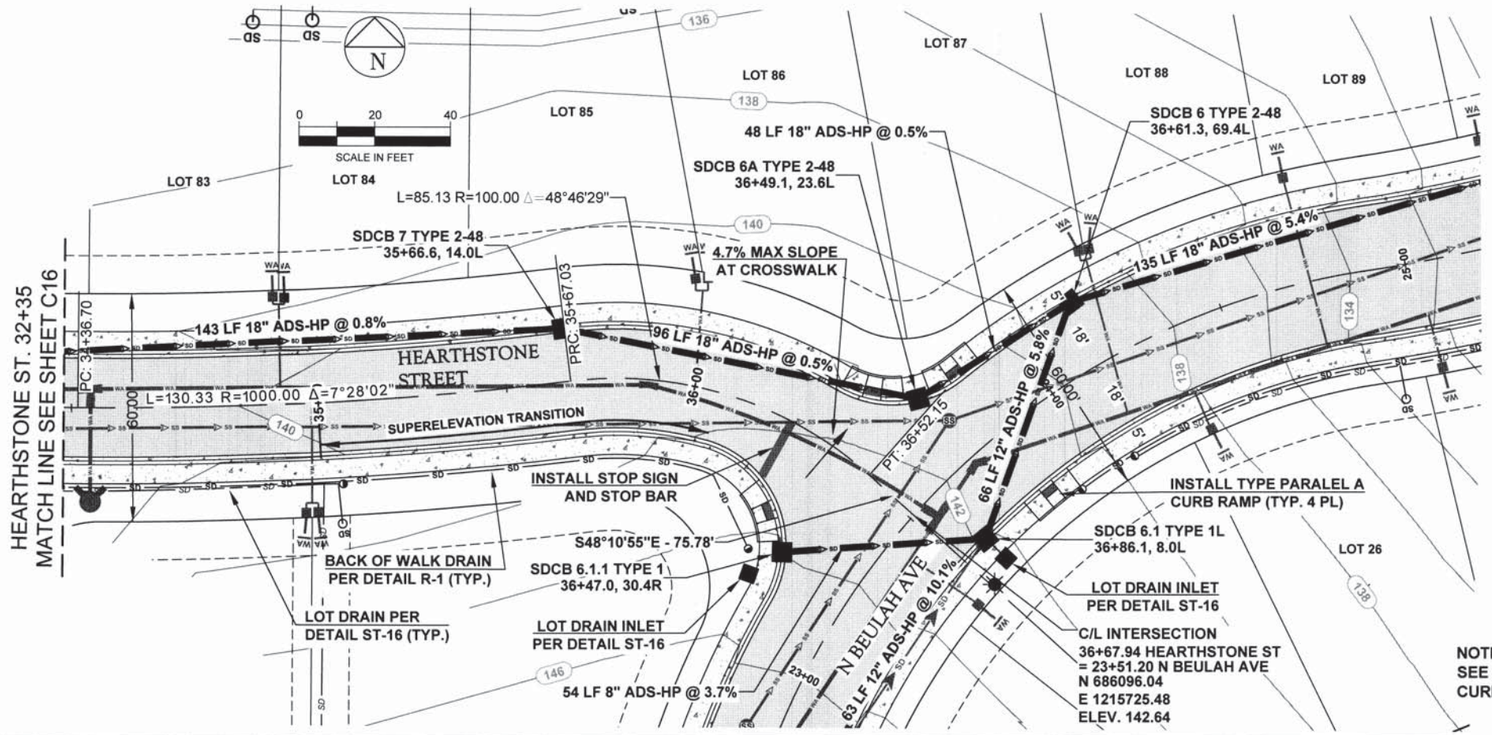
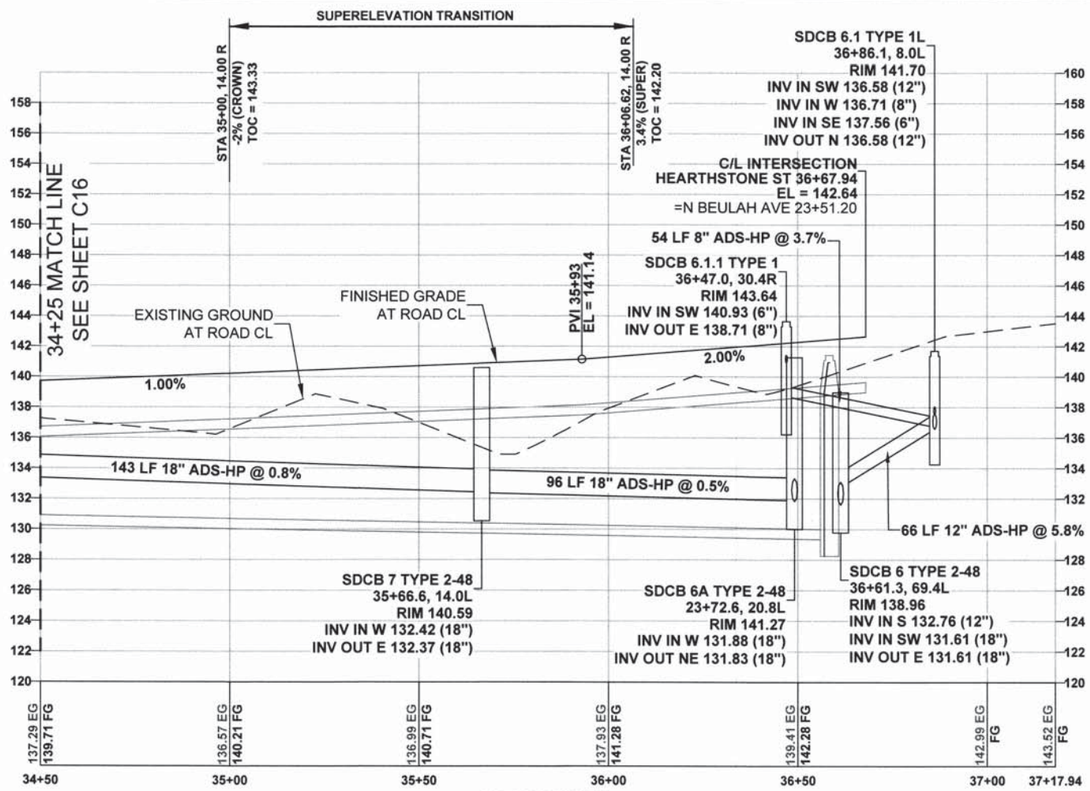
JUL 09 2019
CITY OF FERNDALE
PUBLIC WORKS DEPARTMENT

07/03/2019 9:10AM P:\M\MDGX0001\0400CAD\DWG\Sheets\PHASE 1 CONSTRUCTION PLANS\C16-C17 HEARTHSTONE ST RDSD.dwg





RECORD DRAWING 7/02/2019

FERNDALE, WASHINGTON
MALLOY TERRACE PUD
PHASE 1 CONSTRUCTION
HEARTHSTONE ST. STREET AND STORM
00671.017 7/17/19 KB

CASCADE ENGINEERING GROUP, P.S., INC.
119 Grand Avenue, Suite D
Bellingham, Washington 98225
(360) 306-8161

REVISIONS	DATE
CITY COMMENTS	7/25/18
CITY COMMENTS	09/05/18
RECORD INFO	07/02/19

DATE: 2/9/2018
DESIGN:
DRAWN: LCP
CHECKED:

SCALE: AS SHOWN

PROJECT NUMBER:
MDGX0001

SHEET NO.
C17
OF

RECORD DRAWING

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AS-BUILT INFORMATION FOR ALL MANHOLE AND CATCH BASIN RIM AND PIPE INVERT ELEVATIONS HAS BEEN PROVIDED BY CONTRACTOR. SURVEYED 5/26/19 TO 6/14/19

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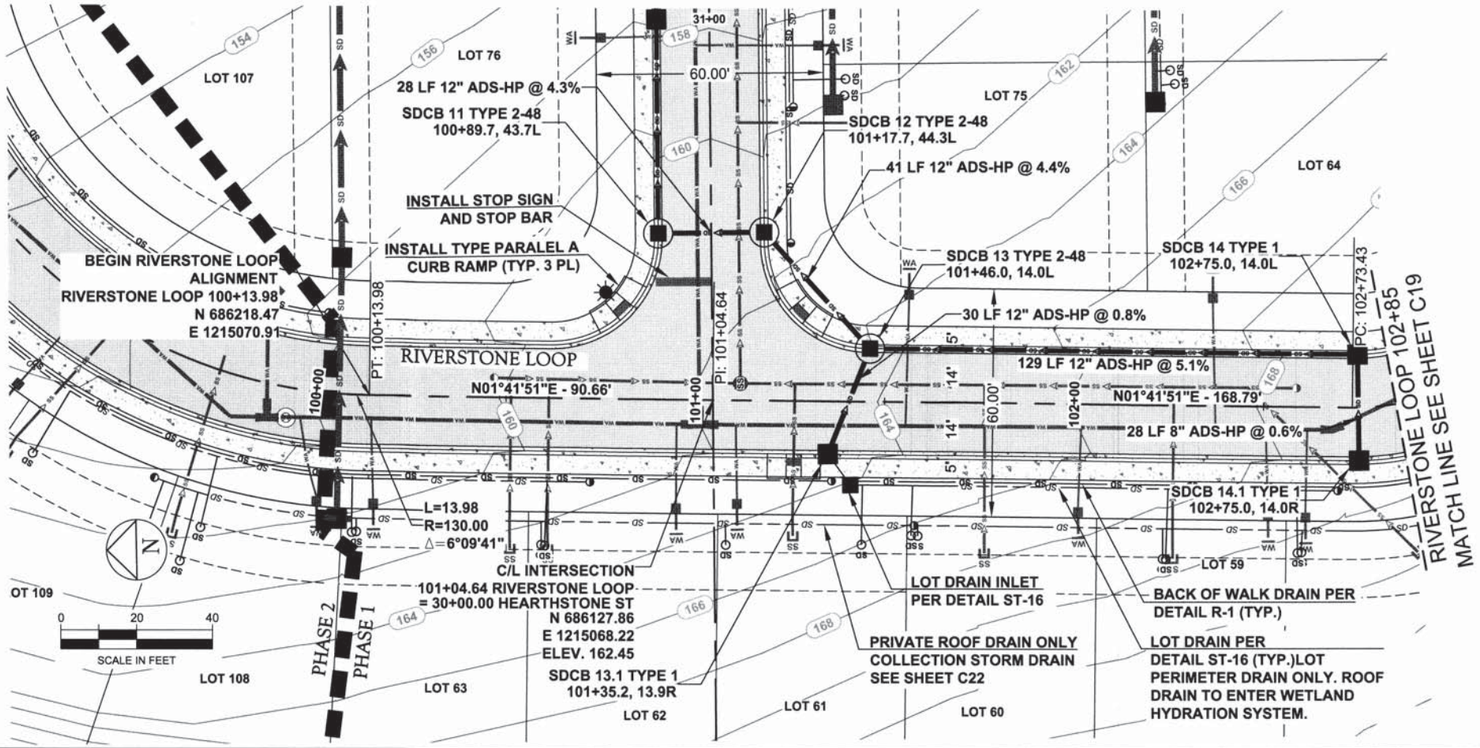
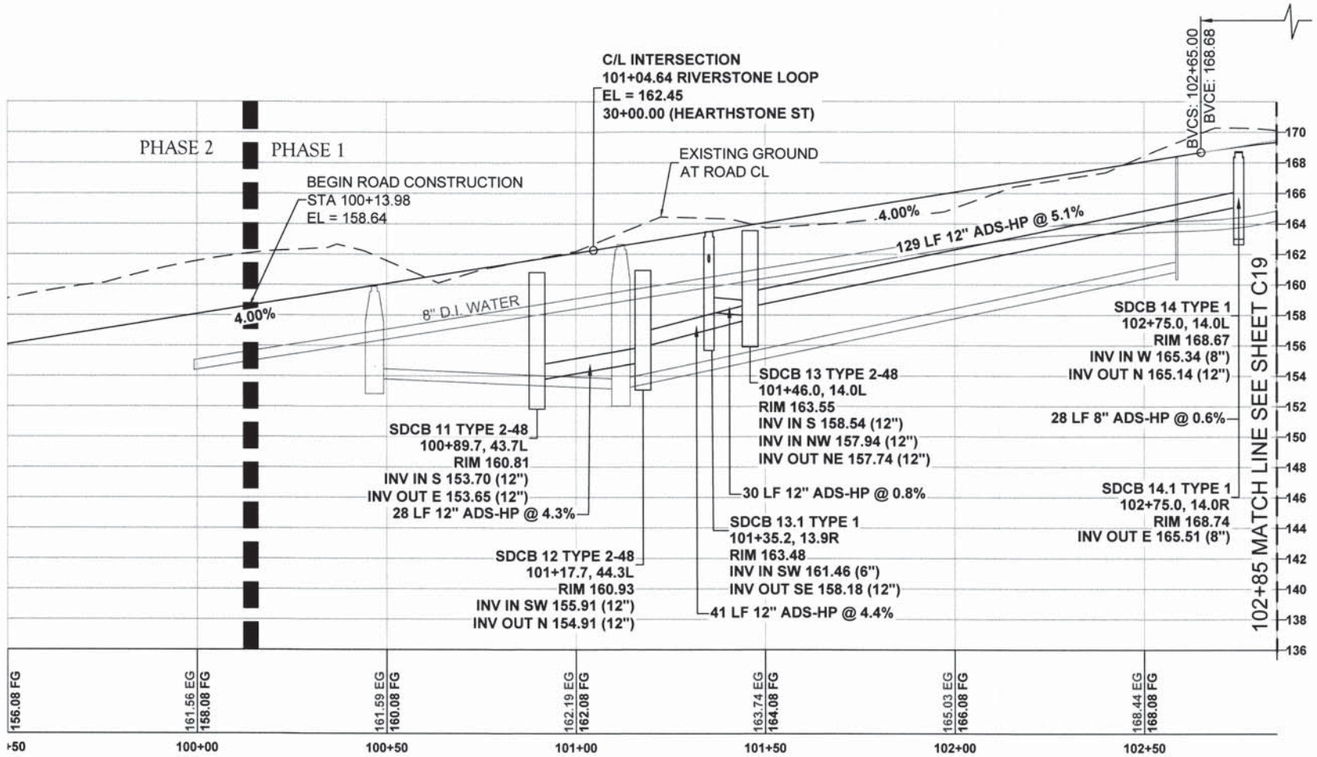
PUBLIC WORKS DEPARTMENT

07/03/2019 9:11AM P:\M\MDGX0001\0400CAD\DWG\Sheets\PHASE 1 CONSTRUCTION PLANS\C16-C17 HEARTHSTONE ST RDSD.dwg



NOTE:
SEE SHEET C21 FOR INTERSECTION
CURB RETURN INFORMATION



RIVERSTONE LOOP
SCALE: H: 1" = 20', V: 1" = 5'

RECORD DRAWING 7/02/2019

FERNDALE, WASHINGTON
MALLOY TERRACE PUD
PHASE 1 CONSTRUCTION
RIVERSTONE LOOP STREET AND STORM

00671.018 7/17/19 KB

CASCADE ENGINEERING GROUP, P.S., INC.
119 Grand Avenue, Suite D
Bellingham, Washington 98225
(360) 306-8161

REVISIONS	DATE
CITY COMMENTS	7/25/18
CITY COMMENTS	09/05/18
LOT LINE & SERVICES REV.	12/04/18
RECORD INFO	07/02/19

DATE: 2/9/2018
DESIGN:
DRAWN: LCP
CHECKED:

SCALE: AS SHOWN

PROJECT NUMBER:
MDGX0001

SHEET NO.
C18
OF

RECORD DRAWING

RECORD DRAWING NOTE:
AS-BUILT INFORMATION FOR ALL MANHOLE AND CATCH BASIN RIM AND PIPE INVERT ELEVATIONS HAS BEEN PROVIDED BY CONTRACTOR. SURVEYED 5/26/19 TO 6/14/19

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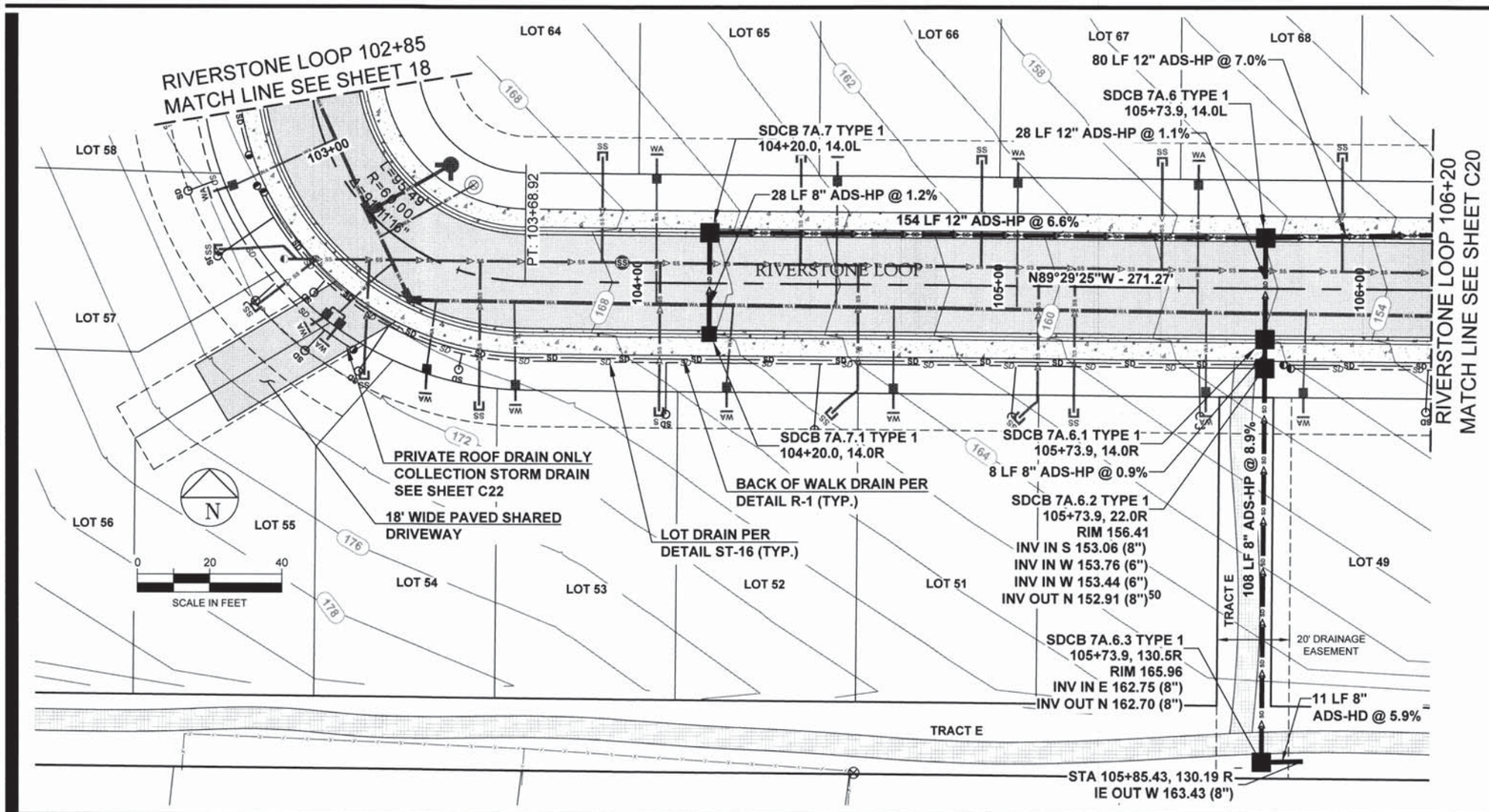
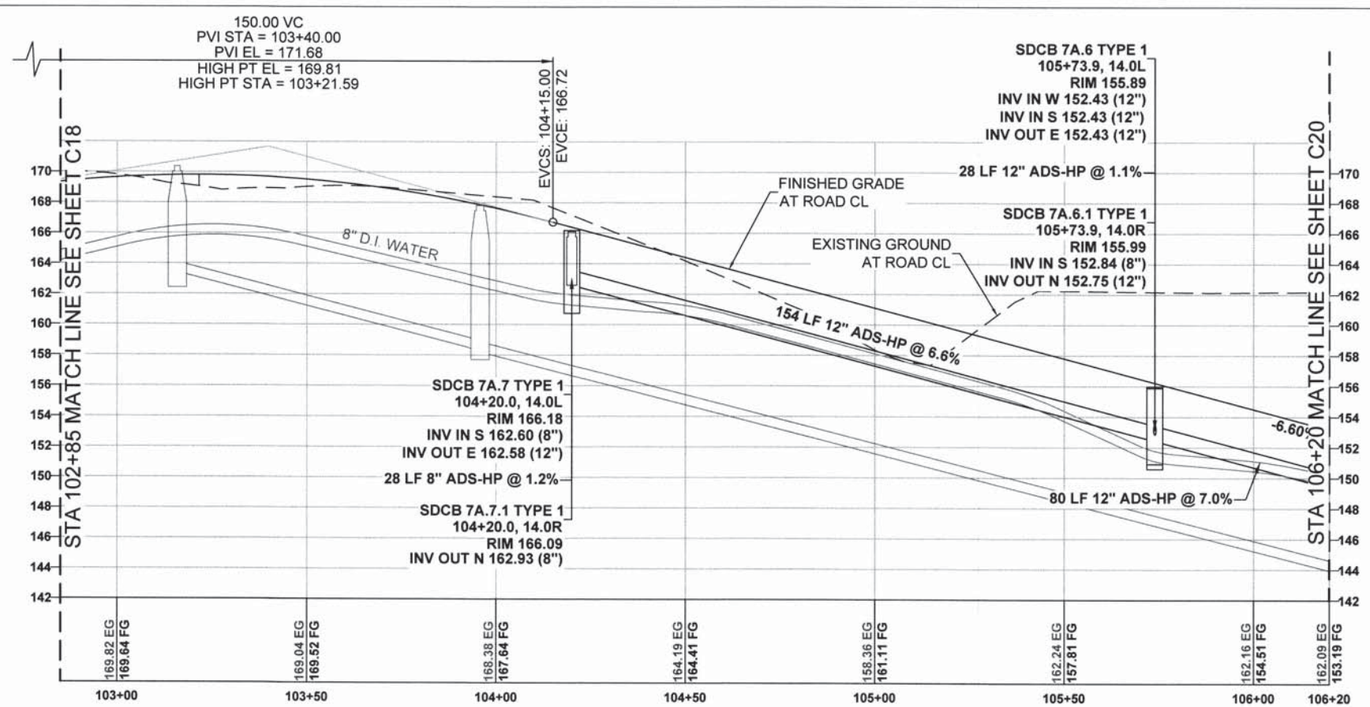
CITY OF FERNDALE
PUBLIC WORKS DEPARTMENT

07/03/2019 9:12AM P:\M\MDGX0001\0400CAD\DWG\Sheets\PHASE 1 CONSTRUCTION PLANS\C18-C20 RIVERSTONE LOOP RD-SD.dwg





RIVERSTONE LOOP
SCALE: H: 1" = 20', V: 1" = 5'

RECORD DRAWING

RECORD DRAWING NOTE:
AS-BUILT INFORMATION FOR ALL MANHOLE AND CATCH BASIN RIM AND PIPE INVERT ELEVATIONS HAS BEEN PROVIDED BY CONTRACTOR. SURVEYED 5/26/19 TO 6/14/19

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JUN 09 2019
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RECORD DRAWING 7/02/2019

FERNDALE, WASHINGTON
MALLOY TERRACE PUD
PHASE 1 CONSTRUCTION
RIVERSTONE LOOP STREET AND STORM

00671.019 7/17/19 KB

GRAND R. PARKINSON
STATE OF WASHINGTON
PROFESSIONAL ENGINEER

CASCADE ENGINEERING GROUP, P.S., INC.
119 Grand Avenue, Suite D
Bellingham, Washington 98225
(360) 306-8161

REVISIONS	DATE
CITY COMMENTS	7/25/18
CITY COMMENTS	09/05/18
STORM DRAIN REVISION	11/30/18
LOT LINE & SERVICES REV.	12/04/18
RECORD INFO	07/02/19

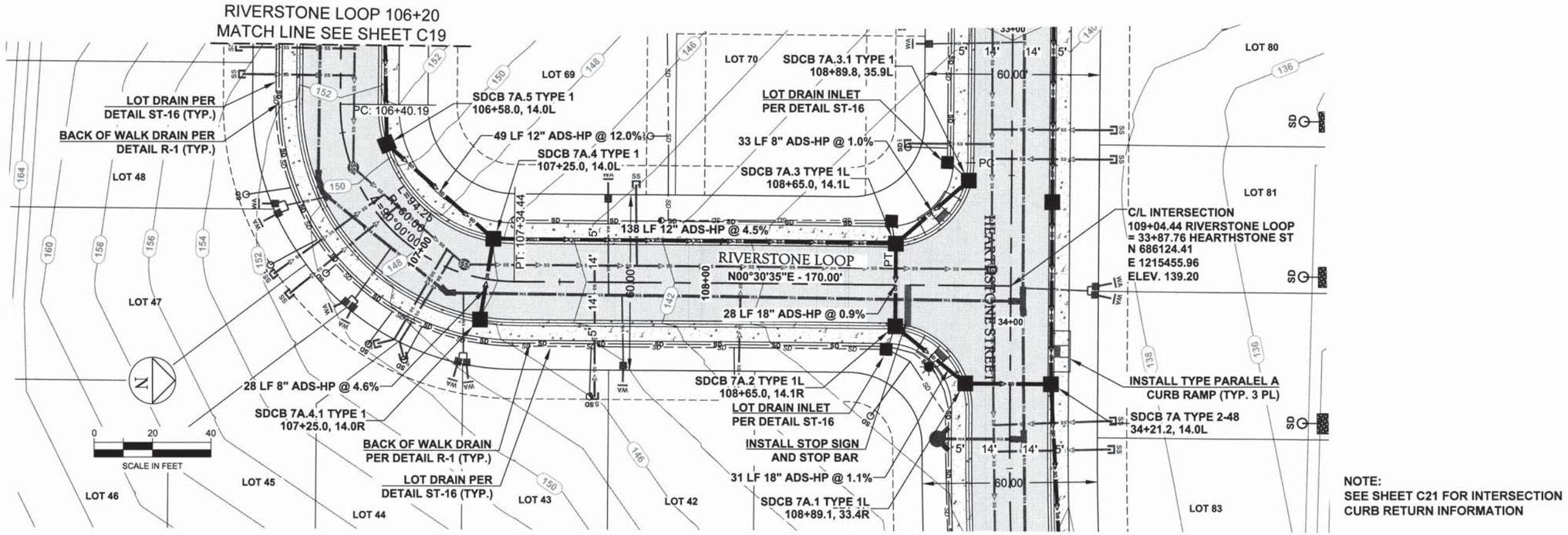
DATE: 2/9/2018
DESIGN:
DRAWN: LCP
CHECKED:

SCALE: AS SHOWN

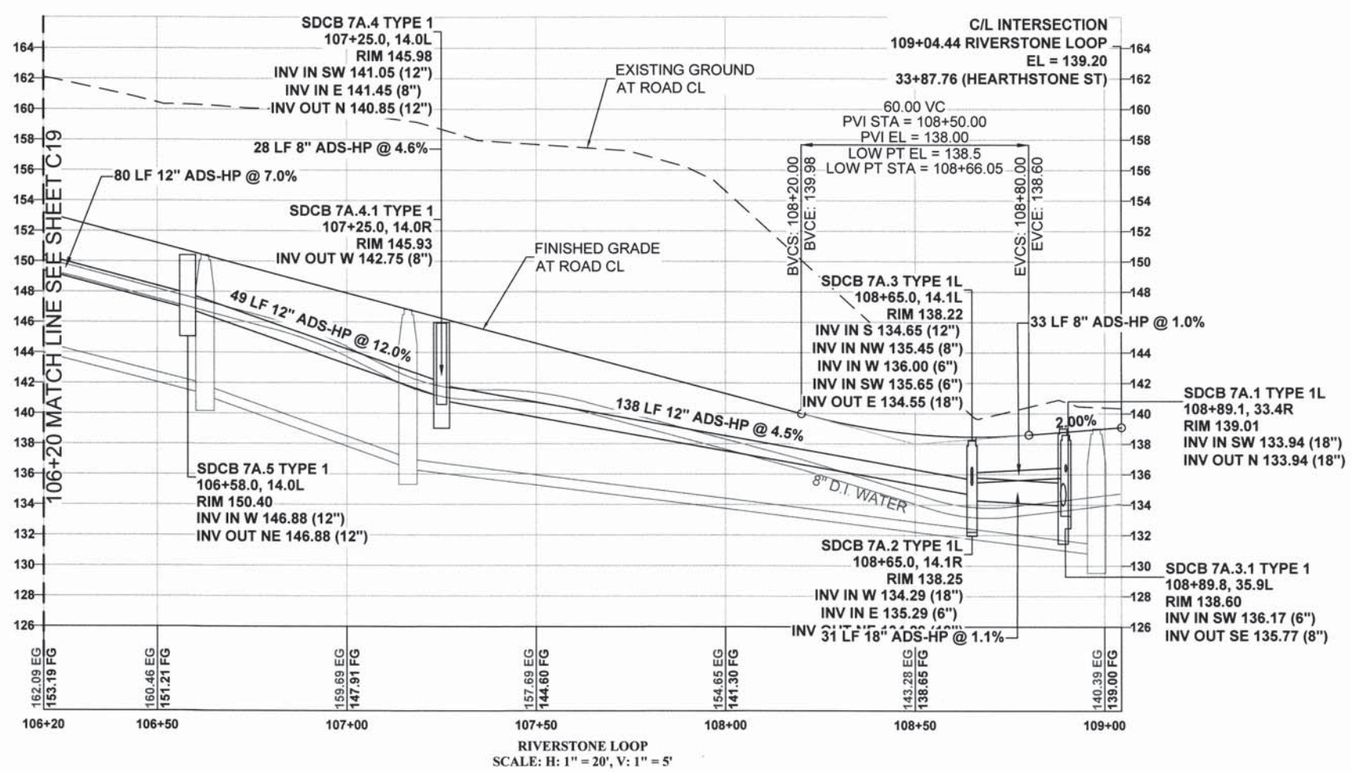
PROJECT NUMBER:
MDGX0001

SHEET NO.
C19
OF

07/03/2019 9:14AM P:\M\MDGX0001\0400CAD\DWG\Sheets\PHASE 1 CONSTRUCTION PLANS\C18-C20 RIVERSTONE LOOP RDSD.dwg



NOTE:
SEE SHEET C21 FOR INTERSECTION
CURB RETURN INFORMATION



RIVERSTONE LOOP
SCALE: H: 1" = 20', V: 1" = 5'

RECORD DRAWING 7/02/2019

FERNDALE, WASHINGTON
MALLOY TERRACE PUD
PHASE 1 CONSTRUCTION
RIVERSTONE LOOP STREET AND STORM

00671.020 7/17/19 KB

CASCADE ENGINEERING GROUP, P.S., INC.
119 Grand Avenue, Suite D
Bellingham, Washington 98225
(360) 306-8161

REVISIONS	DATE
CITY COMMENTS	7/25/18
CITY COMMENTS	09/05/18
RECORD INFO	07/02/19

RECORD DRAWING

RECORD DRAWING NOTE:
AS-BUILT INFORMATION FOR ALL MANHOLE AND CATCH BASIN RIM AND PIPE INVERT ELEVATIONS HAS BEEN PROVIDED BY CONTRACTOR. SURVEYED 5/26/19 TO 6/14/19

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CITY OF FERNDALE
PUBLIC WORKS DEPARTMENT

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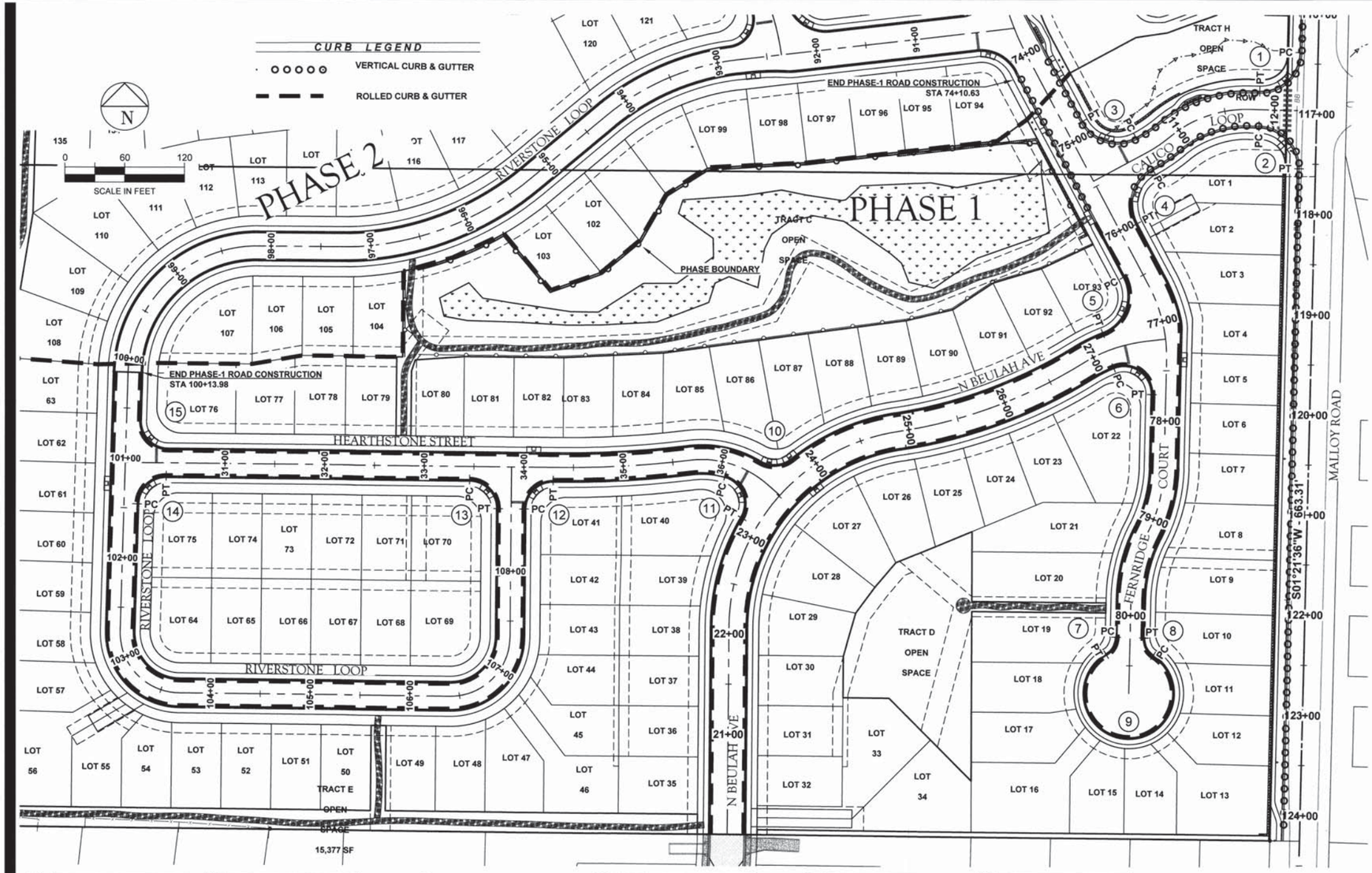
SCALE: AS SHOWN

PROJECT NUMBER:
MDGX0001

SHEET NO.
C20
OF

07/03/2019 9:15AM P:\M\MDGX0001\0400CAD\DWG\Sheets\PHASE 1 CONSTRUCTION PLANS\C18-C20 RIVERSTONE LOOP RD-SD.dwg



1 TOP BACK OF CURB ELEVATIONS	
PC	115.43
1/2 Δ	115.69
PT	115.94
RADIUS POINT	
11+84.87 , 58.00 L	
CALICO LOOP	
116+38.75 , 58.00 R	
MALLOY AVE	
Δ =	90.0000
R =	39.50
L =	62.05

2 TOP BACK OF CURB ELEVATIONS	
PC	115.94
1/2 Δ	**116.40** ~~116.63~~
PT	117.94
RADIUS POINT	
11+84.87 , 58.00 R	
CALICO LOOP	
117+54.75 , 58.00 R	
MALLOY AVE	
Δ =	90.0000
R =	39.50
L =	62.05

3 TOP BACK OF CURB ELEVATIONS	
PC	120.85
1/2 Δ	121.65
PT	121.76
RADIUS POINT	
10+58.00 , 58.00 L	
CALICO LOOP	
74+86.19 , 58.00 L	
FERNRIDGE DR.	
Δ =	90.0000
R =	39.50
L =	62.05

4 TOP BACK OF CURB ELEVATIONS	
PC	123.63
1/2 Δ	122.09
PT	120.85
RADIUS POINT	
10+58.00 , 58.00 R	
CALICO LOOP	
76+02.19 , 58.00 L	
FERNRIDGE DR.	
Δ =	90.0000
R =	39.50
L =	62.05

5 TOP BACK OF CURB ELEVATIONS	
PC	124.40
1/2 Δ	124.80
PT	124.68
RADIUS POINT	
27+17.46 , 58.00 L	
N. BEULAH	
76+42.77 , 58.00 R	
FERNRIDGE DR.	
Δ =	97.2907
R =	39.50
L =	67.07

6 TOP BACK OF CURB ELEVATIONS	
PC	124.68
1/2 Δ	125.52
PT	126.36
RADIUS POINT	
27+15.14 , 46.00 R	
N. BEULAH	
77+74.13 , 42.00 R	
FERNRIDGE DR.	
Δ =	113.0071
R =	27.50
L =	54.24

7 TOP BACK OF CURB ELEVATIONS	
PC	130.09
1/2 Δ	130.32
PT	130.55
RADIUS POINT	
80+22.32 , 34.00 R	
FERNRIDGE CT.	
Δ =	58.4611
R =	19.50
L =	19.90

8 TOP BACK OF CURB ELEVATIONS	
PC	130.55
1/2 Δ	130.32
PT	130.09
RADIUS POINT	
80+22.32 , 34.00 L	
FERNRIDGE CT.	
Δ =	58.4611
R =	19.50
L =	19.90

9 TOP BACK OF CURB ELEVATIONS	
PC	130.55
1/8	**131.64** ~~131.24~~
1/4 Δ	**132.60** ~~131.93~~
3/8	**133.20** ~~132.61~~
1/2 Δ	**133.38** ~~133.30~~
5/8	**133.20** ~~132.61~~
3/4 Δ	**132.60** ~~131.93~~
7/8	**131.64** ~~131.24~~
PT	130.55
RADIUS POINT	
80+77.72 , -	
FERNRIDGE CT.	
Δ =	296.9223
R =	45.50
L =	235.79

10 TOP BACK OF CURB ELEVATIONS	
PC	141.01
1/8 Δ	**141.35** ~~141.09~~
1/4 Δ	**141.55** ~~141.25~~
1/2 Δ	**141.80** ~~141.63~~
5/8 Δ	**141.90** ~~141.82~~
3/4 Δ	142.01
7/8 Δ	142.07
PT	142.01
RADIUS POINT	
23+83.37 , 46.00 L	
N. BEULAH	
36+32.99 , 42.00 L	
HEARTHSTONE	
Δ =	69.8061
R =	27.50
L =	33.51

11 TOP BACK OF CURB ELEVATIONS	
PC	142.23
1/4 Δ	142.79
~~7/16 Δ~~	~~143.41~~
1/2 Δ	143.47
~~9/16 Δ~~	~~145.53~~
3/4 Δ	144.24
PT	145.12
RADIUS POINT	
23+12.00 , 46.00 L	
N. BEULAH	
36+06.62 , 42.00 R	
HEARTHSTONE	
Δ =	104.8572
R =	27.50
L =	50.33

12 TOP BACK OF CURB ELEVATIONS	
PC	138.53
1/4 Δ	**138.74** ~~138.70~~
1/2 Δ	**139.00** ~~139.06~~
3/4 Δ	**139.28** ~~139.43~~
PT	139.58
RADIUS POINT	
34+29.76 , 42.00 R	
HEARTHSTONE	
108+62.44 , 42.00 R	
RIVERSTONE	
Δ =	90.0000
R =	27.50
L =	43.20

13 TOP BACK OF CURB ELEVATIONS	
PC	139.01
1/2 Δ	**138.78** ~~138.75~~
PT	138.53
RADIUS POINT	
33+45.76 , 42.00 R	
HEARTHSTONE	
108+62.44 , 42.00 L	
RIVERSTONE	
Δ =	90.0000
R =	27.50
L =	43.20

14 TOP BACK OF CURB ELEVATIONS	
PC	163.98
1/2 Δ	163.11
PT	161.36
RADIUS POINT	
30+41.14 , 42.00 R	
HEARTHSTONE	
101+45.77 , 42.00 L	
RIVERSTONE	
Δ =	88.8122
R =	27.50
L =	42.63

15 TOP BACK OF CURB ELEVATIONS	
PC	161.29
1/4 Δ	**161.01** ~~161.47~~
1/2 Δ	**160.93** ~~161.30~~
3/4 Δ	**160.85** ~~161.01~~
PT	160.62
RADIUS POINT	
30+42.88 , 42.00 L	
HEARTHSTONE	
100+61.76 , 42.00 L	
RIVERSTONE	
Δ =	91.1880
R =	27.50
L =	43.77

*ADJUST SDCB 6A RIM TO 141.32 (RAISE 0.30' FROM CURRENT RIM ELEVATION)

CALL BEFORE YOU DIG
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APPROVED
JUL 09 2019
For Kevin Renz
CITY OF FERNDALE
PUBLIC WORKS DEPARTMENT

RECORD DRAWING 7/02/2019

FERNDALE, WASHINGTON

MALLOY TERRACE PUD
PHASE 1 CONSTRUCTION

INTERSECTION CURB RETURNS & CURB PLAN

00671.021 7/17/19 KB

CRAIG P. PARKINSON STATE OF WASHINGTON 22822 REGISTERED PROFESSIONAL ENGINEER

CASCADE ENGINEERING GROUP, P.S., INC.
119 Grand Avenue, Suite D
Bellingham, Washington 98225
(360) 306-8161

REVISIONS	DATE
CITY COMMENTS	7/25/18
CITY COMMENTS	09/05/18
CITY COMMENTS	09/10/18
RETURN ELEV REV.	03/18/19
RECORD INFO	07/02/19

DATE: 2/9/2018
DESIGN:
DRAWN: LCP
CHECKED:

SCALE: AS SHOWN

PROJECT NUMBER:

MDGX0001

SHEET NO.

C21

OF

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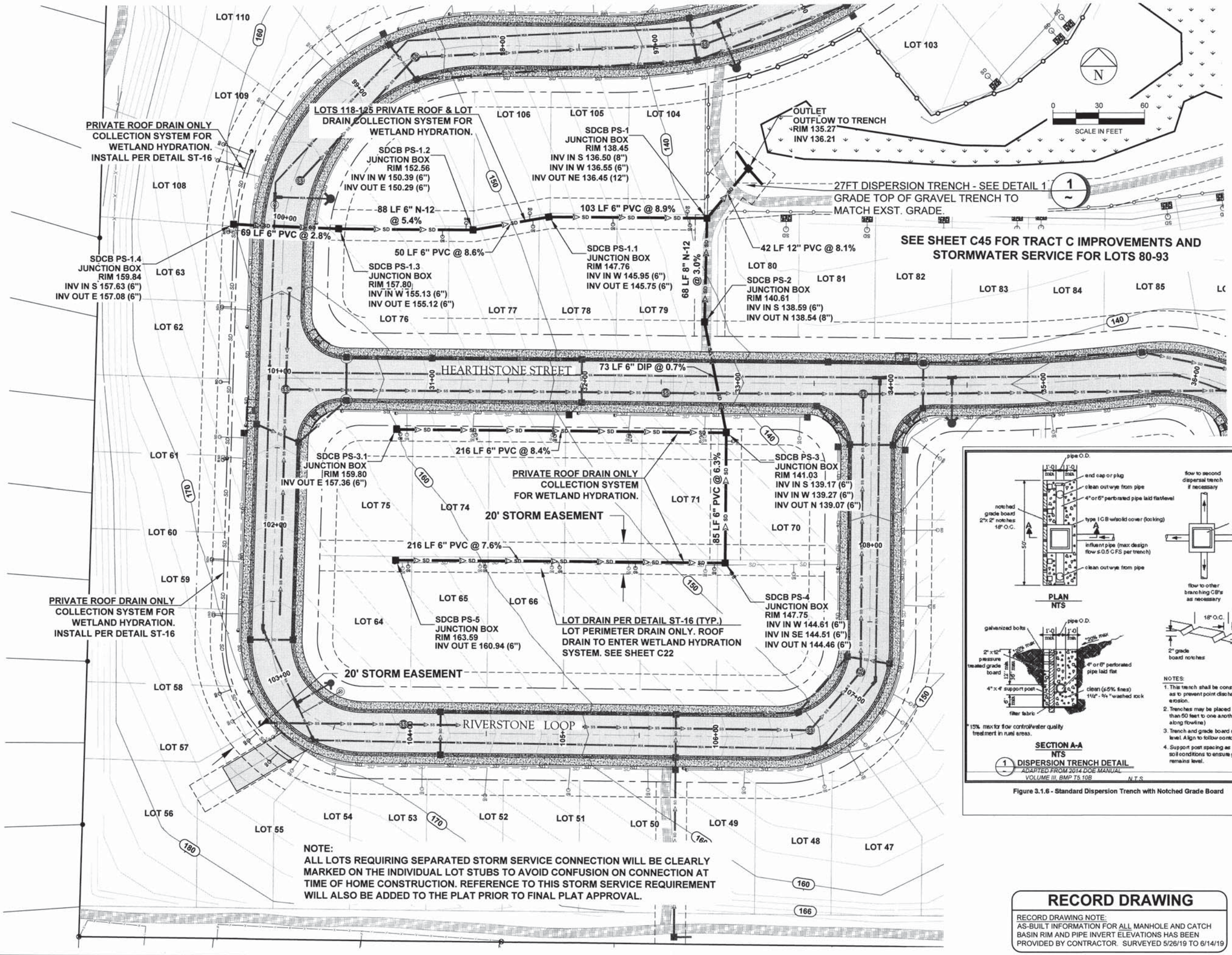

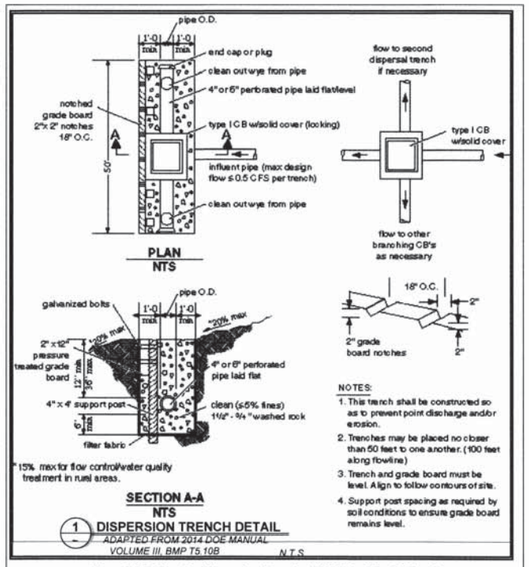

Figure 3.1.6 - Standard Dispersion Trench with Notched Grade Board

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RECORD DRAWING

RECORD DRAWING NOTE:
AS-BUILT INFORMATION FOR ALL MANHOLE AND CATCH BASIN RIM AND PIPE INVERT ELEVATIONS HAS BEEN PROVIDED BY CONTRACTOR. SURVEYED 5/26/19 TO 6/14/19

APPROVED
JUL 09 2019
CITY OF FERNDALE
PUBLIC WORKS DEPARTMENT

RECORD DRAWING 7/02/2019

FERNDALE, WASHINGTON
MALLOY TERRACE PUD
PHASE 1 CONSTRUCTION
PRIVATE WETLAND HYDRATION STORM DRAIN
00671.022 7/17/19 KB

CRAIG R. PARKINSON
STATE OF WASHINGTON
25300
REGISTERED PROFESSIONAL ENGINEER

CASCADE ENGINEERING GROUP, P.S., INC.
119 Grand Avenue, Suite D
Bellingham, Washington 98225
(360) 306-8161

REVISIONS	DATE
CITY COMMENTS	7/25/18
CITY COMMENTS	09/05/18
CITY COMMENTS	09/10/18
RECORD INFO	07/02/19

DATE: 2/9/2018
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CHECKED:

SCALE: AS SHOWN

PROJECT NUMBER:
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SHEET NO.
C22
OF

07/03/2019 11:05AM P:\M\MDGX0001\0400CAD\DWG\Sheets\PHASE 1 CONSTRUCTION PLANS\C22-WETLAND HYDRATION STORM DRAIN.dwg

HEARTHSTONE STREET

LOT 40 | LOT 39 | LOT 38 | LOT 37 | LOT 36 | LOT 35

LOT 26 | LOT 25 | LOT 24 | LOT 27 | LOT 21 | LOT 28 | LOT 29 | LOT 30 | LOT 31 | LOT 32 | LOT 33 | LOT 34 | LOT 19 | LOT 18 | LOT 17 | LOT 16 | LOT 15 | LOT 14

N BEULAH AVE

FERNRIDGE COURT

23+00 | 22+00 | 21+00 | 79+00 | 80+00 | 81+00

SDCB 3.2.4
INLET
RIM 138.75
INV OUT SE 136.28 (6")

INSTALL YARD
HYDRANT / HOSE BIB

IRRIGATION METER
AND SERVICE TO
TRACT D

SDMH 3.2.3
TYPE 2-48
RIM 138.50
INV IN NW 134.53 (6")
INV IN W 134.73 (6")
INV IN S 134.83 (6")
INV OUT E 132.60 (6")

1 ~ 67 LF TRENCH DRAIN

20' UTILITY EASEMENT

LOT DRAIN PER
DETAIL ST-16 (TYP.)

15' UTILITY EASEMENT

N

0 20 40
SCALE IN FEET

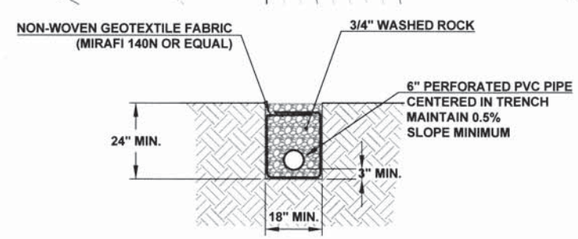
TRACT D OPEN
SPACE

SDCB 3.2.2
TYPE 1
RIM 128.82
INV IN W 125.72 (6")
INV OUT N 125.72 (12")

6" DUAL SEWER SERVICE
PER DETAIL SS-15.
CLEANOUTS REQUIRED
EVERY 100' (TYP.)

LOT & ROOF STORM
DRAIN SERVICE.
6" PVC

140 | 150 | 162 | 156 | 136 | 138



1 ~ TRENCH DRAIN DETAIL
N.T.S.

RECORD DRAWING 7/02/2019

FERNDALE, WASHINGTON
MALLOY TERRACE PUD
PHASE 1 CONSTRUCTION
BACK LOT STORM & SEWER SERVICE
00671.023 7/17/19 KB

CRAIG R. PARKINSON
STATE OF WASHINGTON
23783
REGISTERED PROFESSIONAL ENGINEER

CASCADE ENGINEERING GROUP, P.S., INC.
119 Grand Avenue, Suite D
Bellingham, Washington 98225
(360) 306-8161

REVISIONS	DATE
CITY COMMENTS	7/25/18
CITY COMMENTS	09/05/18
RECORD INFO	07/02/19

RECORD DRAWING

RECORD DRAWING NOTE:
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CITY OF FERNDALE
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SCALE: AS SHOWN

PROJECT NUMBER:
MDGX0001

SHEET NO.
C23
OF

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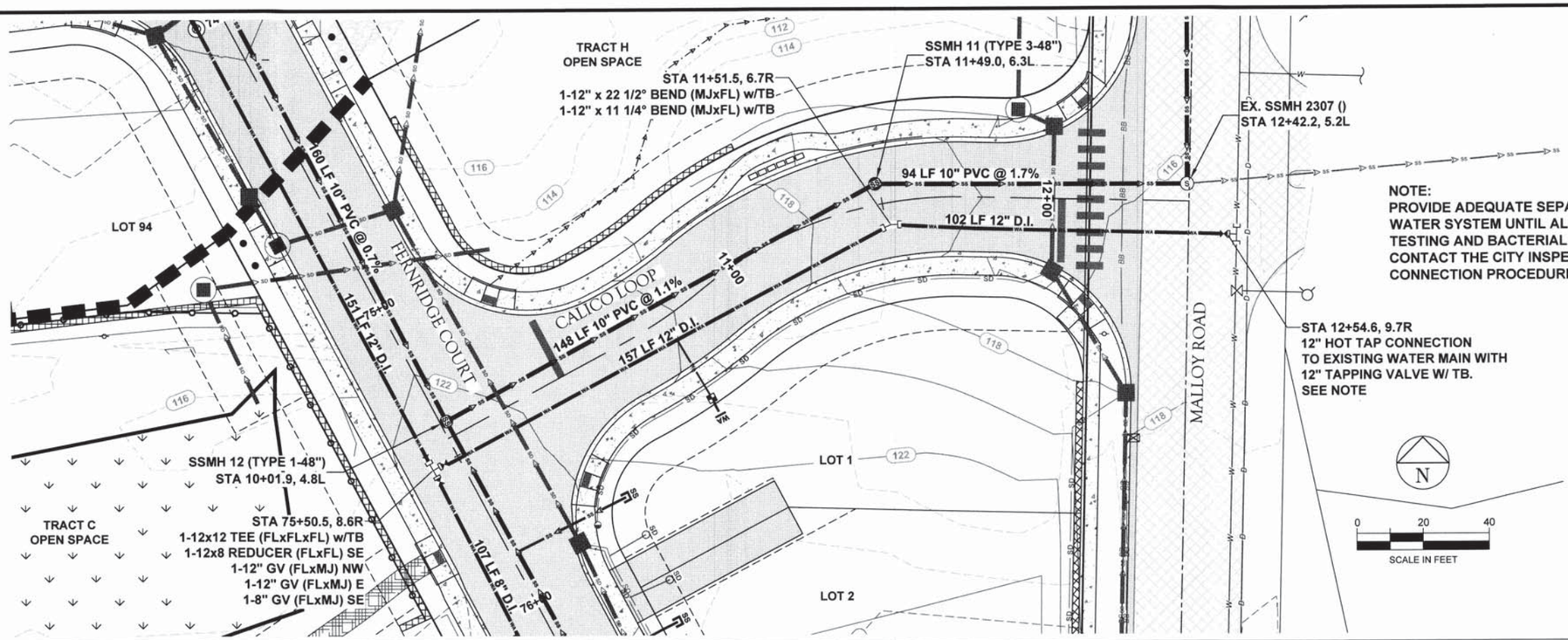
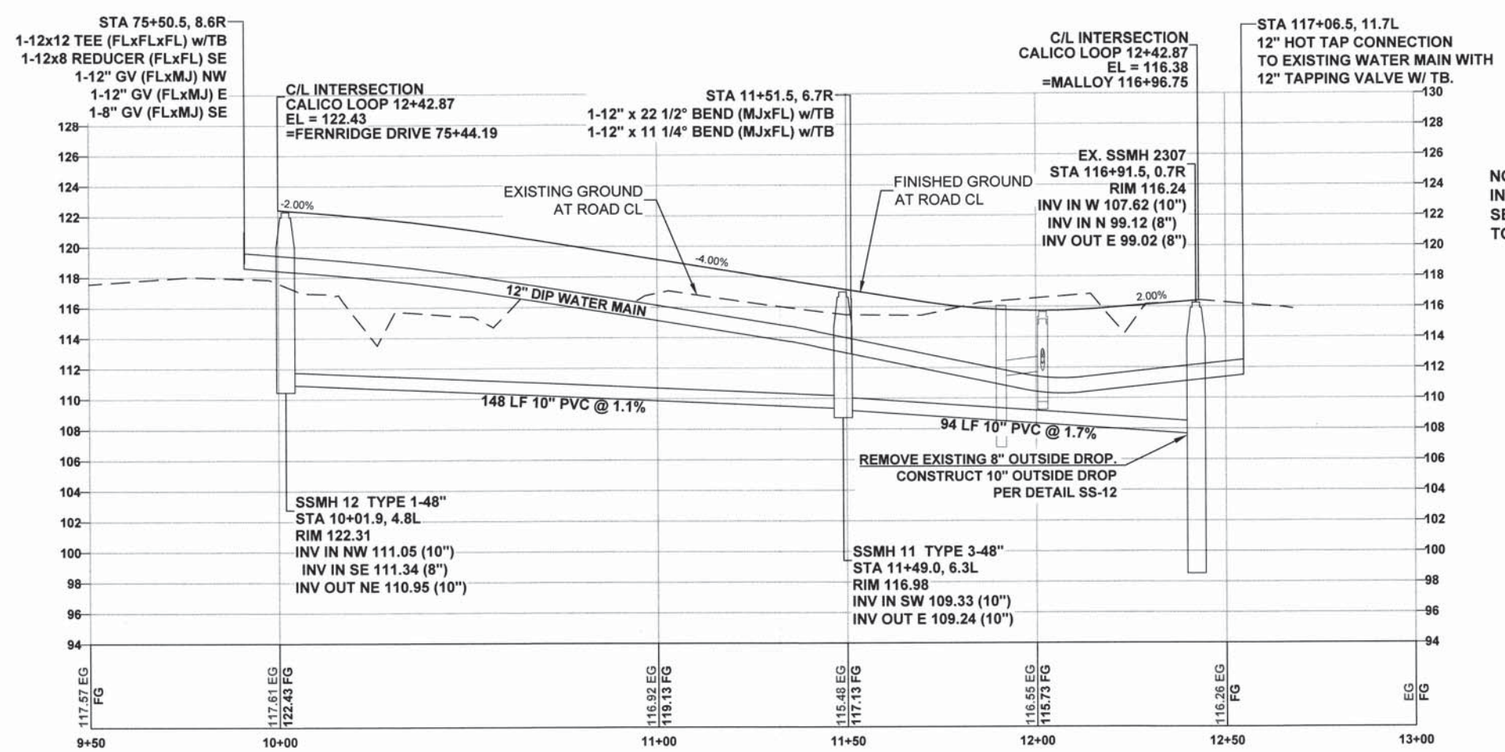


NOTE:
PROVIDE ADEQUATE SEPARATION FROM THE PUBLIC WATER SYSTEM UNTIL ALL REQUIRED PRESSURE TESTING AND BACTERIAL TESTING IS COMPLETE. CONTACT THE CITY INSPECTOR FOR TESTING AND CONNECTION PROCEDURES.



CALICO LOOP
SCALE: H: 1" = 20', V: 1" = 5'

NOTE:
INSTALL WATER MAIN TO PROVIDE 0.75' SEPARATION FROM STORM DRAIN CROSSINGS TO MINIMIZE DEPTH AND DEFLECTION

RECORD DRAWING

RECORD DRAWING NOTE:
AS-BUILT INFORMATION FOR ALL MANHOLE AND CATCH BASIN RIM AND PIPE INVERT ELEVATIONS HAS BEEN PROVIDED BY CONTRACTOR. SURVEYED 5/26/19 TO 6/14/19

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PUBLIC WORKS DEPARTMENT

RECORD DRAWING 7/02/2019

FERNDALE, WASHINGTON
MALLOY TERRACE PUD
PHASE 1 CONSTRUCTION
CALICO LOOP SEWER AND WATER
00671.024 7/17/19 KB

CRAIG R. PARKINSON
STATE OF WASHINGTON
23783
REGISTERED PROFESSIONAL ENGINEER

CASCADE ENGINEERING GROUP, P.S., INC.
119 Grand Avenue, Suite D
Bellingham, Washington 98225
(360) 306-8161

REVISIONS	DATE
CITY COMMENTS	7/25/18
CITY COMMENTS	09/05/18
CITY COMMENTS	09/10/18
RECORD INFO	07/02/19

DATE: 2/9/2018
DESIGN:
DRAWN: LCP
CHECKED:

SCALE: AS SHOWN

PROJECT NUMBER:
MDGX0001

SHEET NO.
C24
OF

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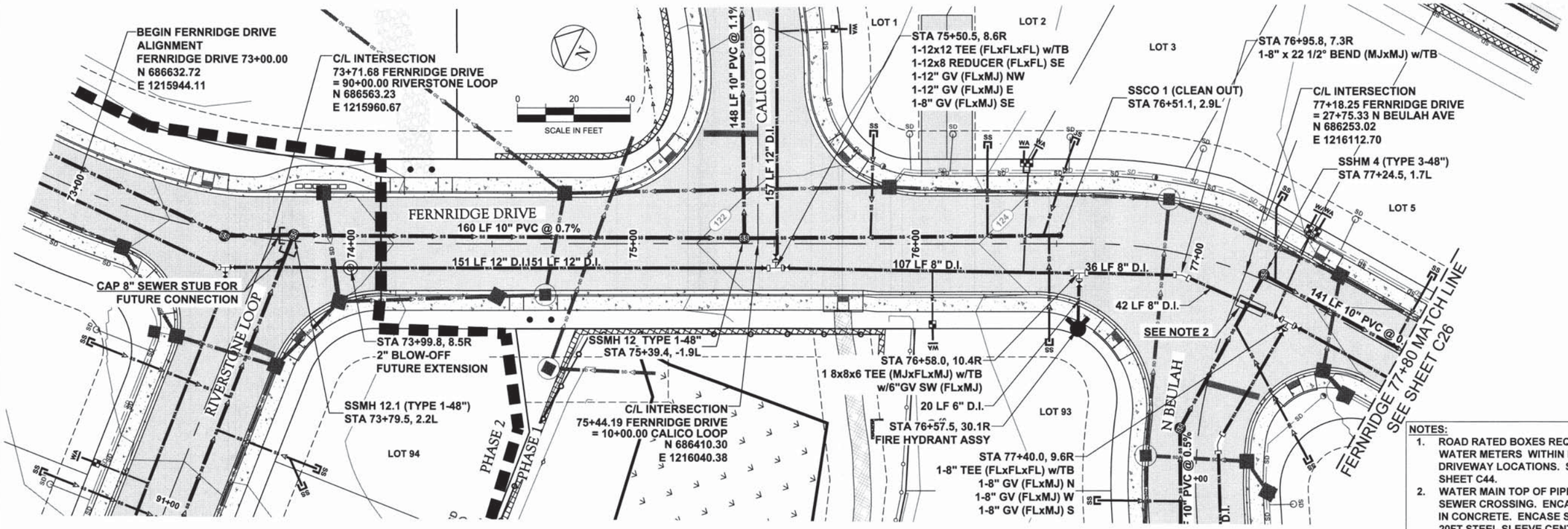
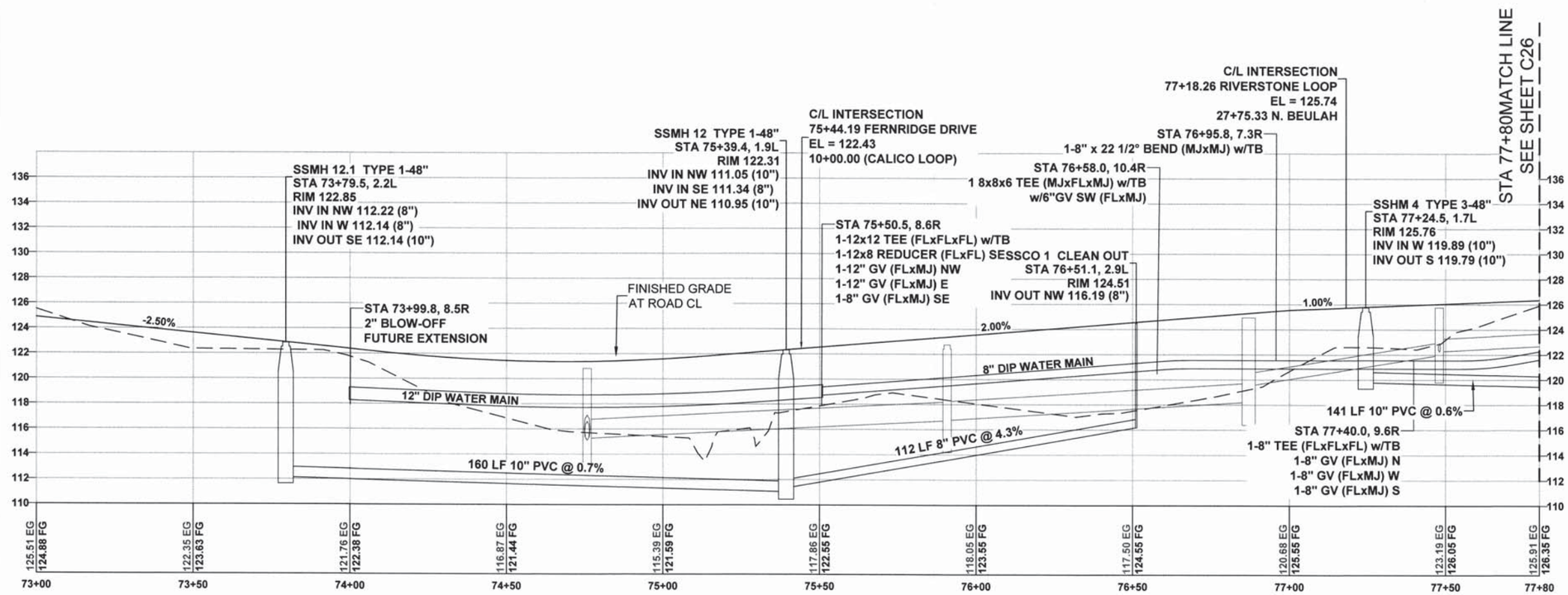


NOTES:
1. ROAD RATED BOXES REQUIRED FOR WATER METERS WITHIN POTENTIAL DRIVEWAY LOCATIONS. SEE DETAIL SHEET C44.
2. WATER MAIN TOP OF PIPE ELEV. 121.00 AT SEWER CROSSING. ENCASE WATER MAIN IN CONCRETE. ENCASE SEWER MAIN IN 20FT STEEL SLEEVE CENTERED ON



FERNRIDGE DRIVE
SCALE: H: 1" = 20', V: 1" = 5'

NOTE:
INSTALL WATER MAIN TO PROVIDE 0.75' SEPARATION FROM STORM DRAIN CROSSINGS TO MINIMIZE DEPTH AND DEFLECTION

RECORD DRAWING

RECORD DRAWING NOTE:
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FERNDALE, WASHINGTON
MALLOY TERRACE PUD
PHASE 1 CONSTRUCTION
FERNRIDGE DRIVE SEWER AND WATER

00671.025 7/17/19 KB

CASCADE ENGINEERING GROUP, P.S., INC.
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(360) 306-8161

REVISIONS	DATE
CITY COMMENTS	7/25/18
CITY COMMENTS	09/05/18
CITY COMMENTS	09/10/18
SSMH12.1 REV	02/07/19
RECORD INFO	07/02/19

DATE: 2/9/2018
DESIGN:
DRAWN: ADJ
CHECKED:

SCALE: AS SHOWN

PROJECT NUMBER:
MDGX0001

SHEET NO.
C25
OF

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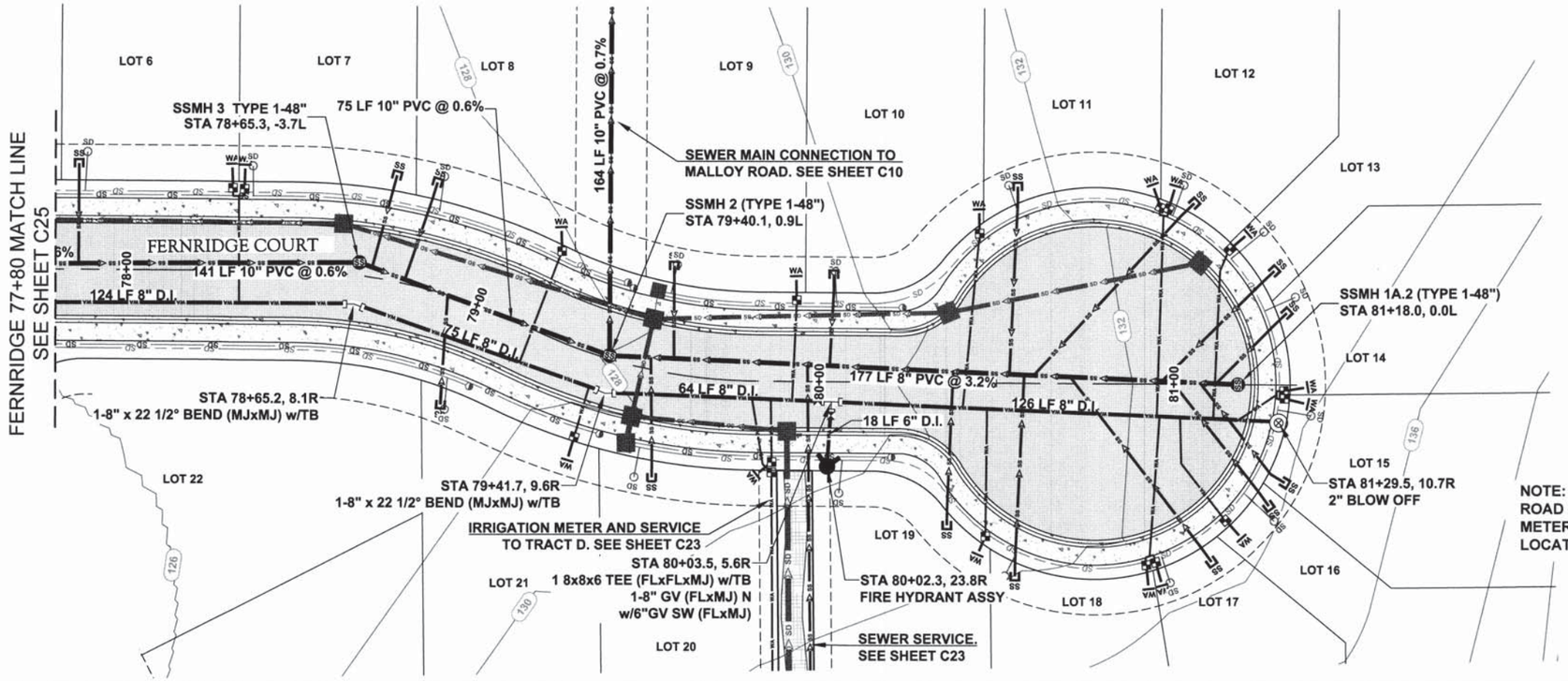
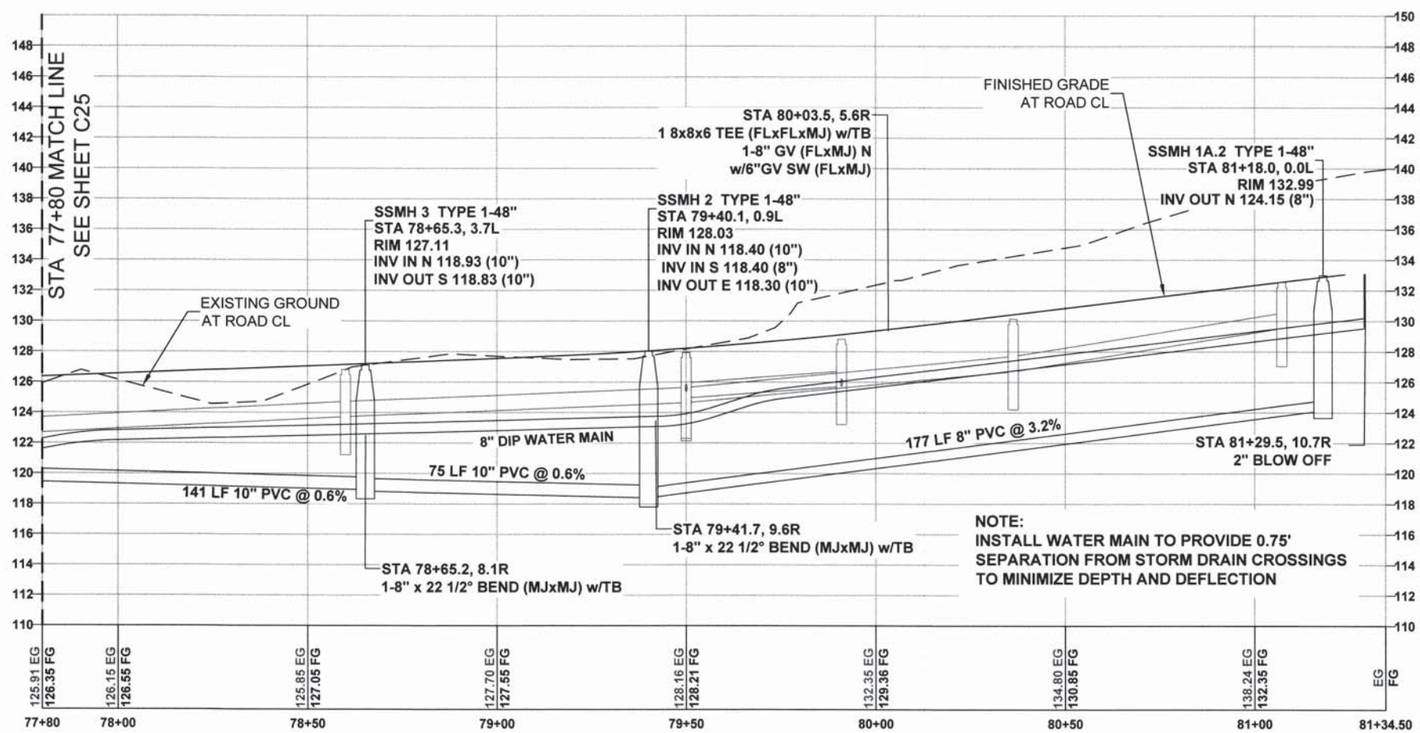


NOTE:
ROAD RATED BOXES REQUIRED FOR WATER METERS WITHIN POTENTIAL DRIVEWAY LOCATIONS. SEE DETAIL SHEET C44.



NOTE:
INSTALL WATER MAIN TO PROVIDE 0.75' SEPARATION FROM STORM DRAIN CROSSINGS TO MINIMIZE DEPTH AND DEFLECTION

FERNRIDGE DRIVE
SCALE: H: 1" = 20', V: 1" = 5'

RECORD DRAWING 7/02/2019

FERNDALE, WASHINGTON
MALLOY TERRACE PUD
PHASE 1 CONSTRUCTION
FERNRIDGE DRIVE SEWER AND WATER

00671.026 7/17/19 KB

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CITY COMMENTS	09/05/18
RECORD INFO	07/02/19

DATE: 2/9/2018
DESIGN:
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SCALE: AS SHOWN

PROJECT NUMBER:
MDGX0001

SHEET NO.
C26
OF

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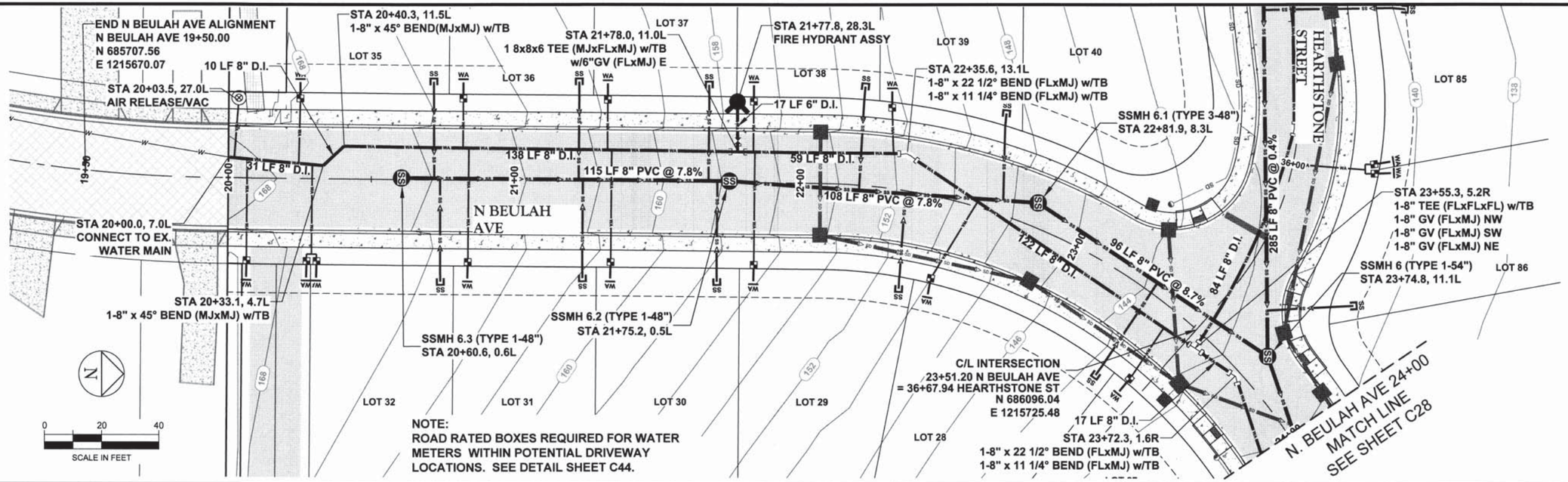

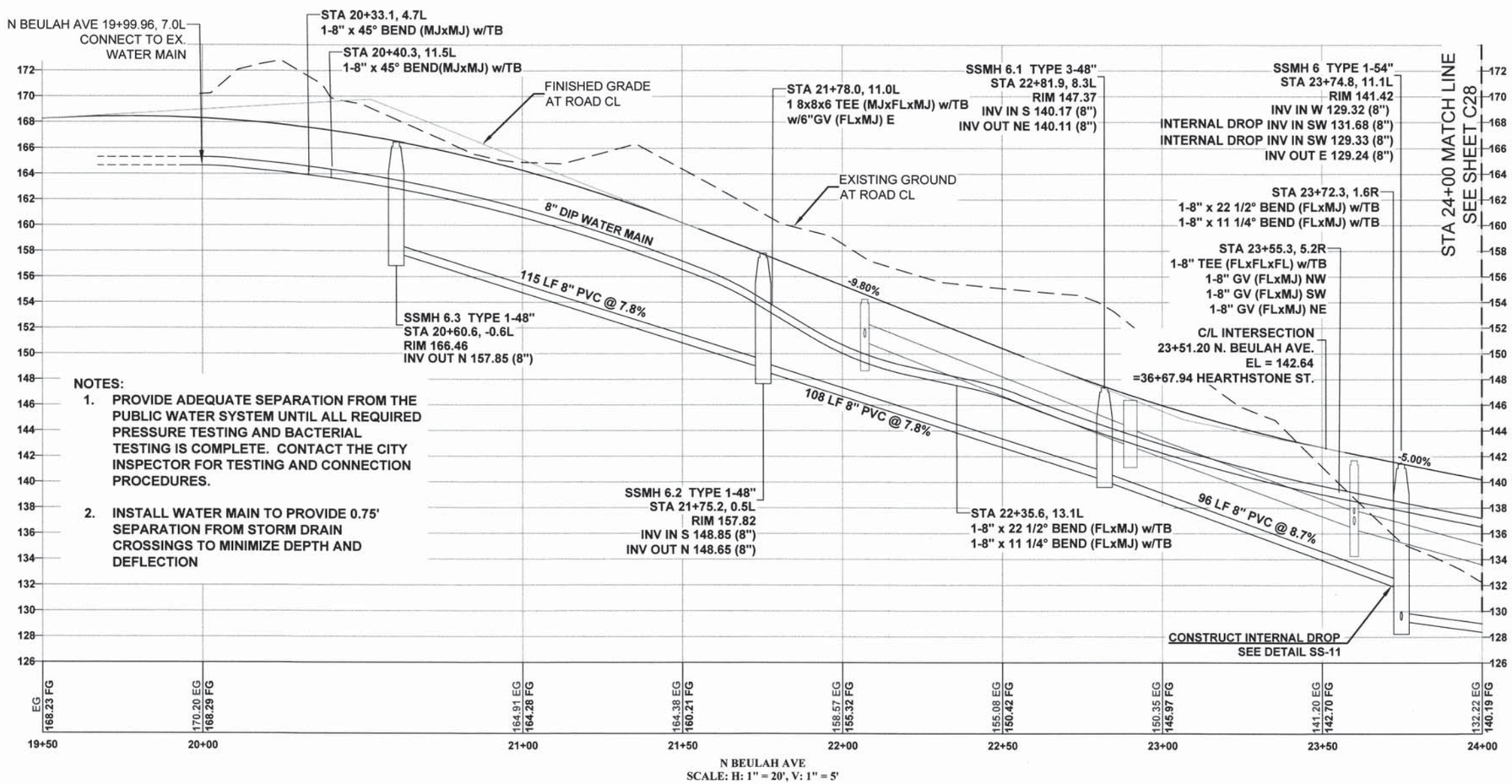

NOTES:

1. PROVIDE ADEQUATE SEPARATION FROM THE PUBLIC WATER SYSTEM UNTIL ALL REQUIRED PRESSURE TESTING AND BACTERIAL TESTING IS COMPLETE. CONTACT THE CITY INSPECTOR FOR TESTING AND CONNECTION PROCEDURES.
2. INSTALL WATER MAIN TO PROVIDE 0.75' SEPARATION FROM STORM DRAIN CROSSINGS TO MINIMIZE DEPTH AND DEFLECTION

RECORD DRAWING

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FERNDALE, WASHINGTON
MALLOY TERRACE PUD
PHASE 1 CONSTRUCTION
N. BEULAH SEWER AND WATER

00671.027 7/17/19 KB

CASCADE ENGINEERING GROUP, P.S., INC.
119 Grand Avenue, Suite D
Bellingham, Washington 98225
(360) 306-8161

REVISIONS	DATE
CITY COMMENTS	7/25/18
VERTICAL ALIGN.	7/25/18
REV. PROFILE FG ELEVATIONS	8/14/18
CITY COMMENTS	09/05/18
CITY COMMENTS	09/10/18
RECORD INFO	07/02/19

DATE: 2/9/2018
DESIGN:
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SCALE: AS SHOWN

PROJECT NUMBER:
MDGX0001

SHEET NO.
C27
OF

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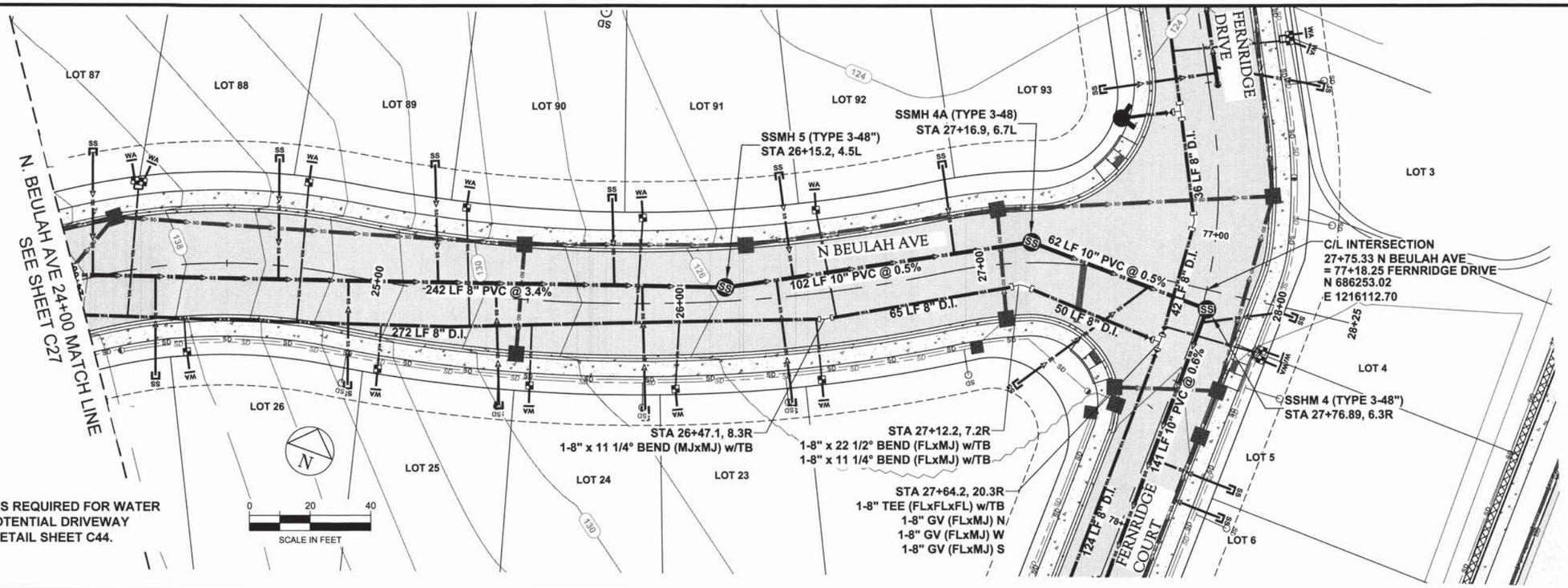
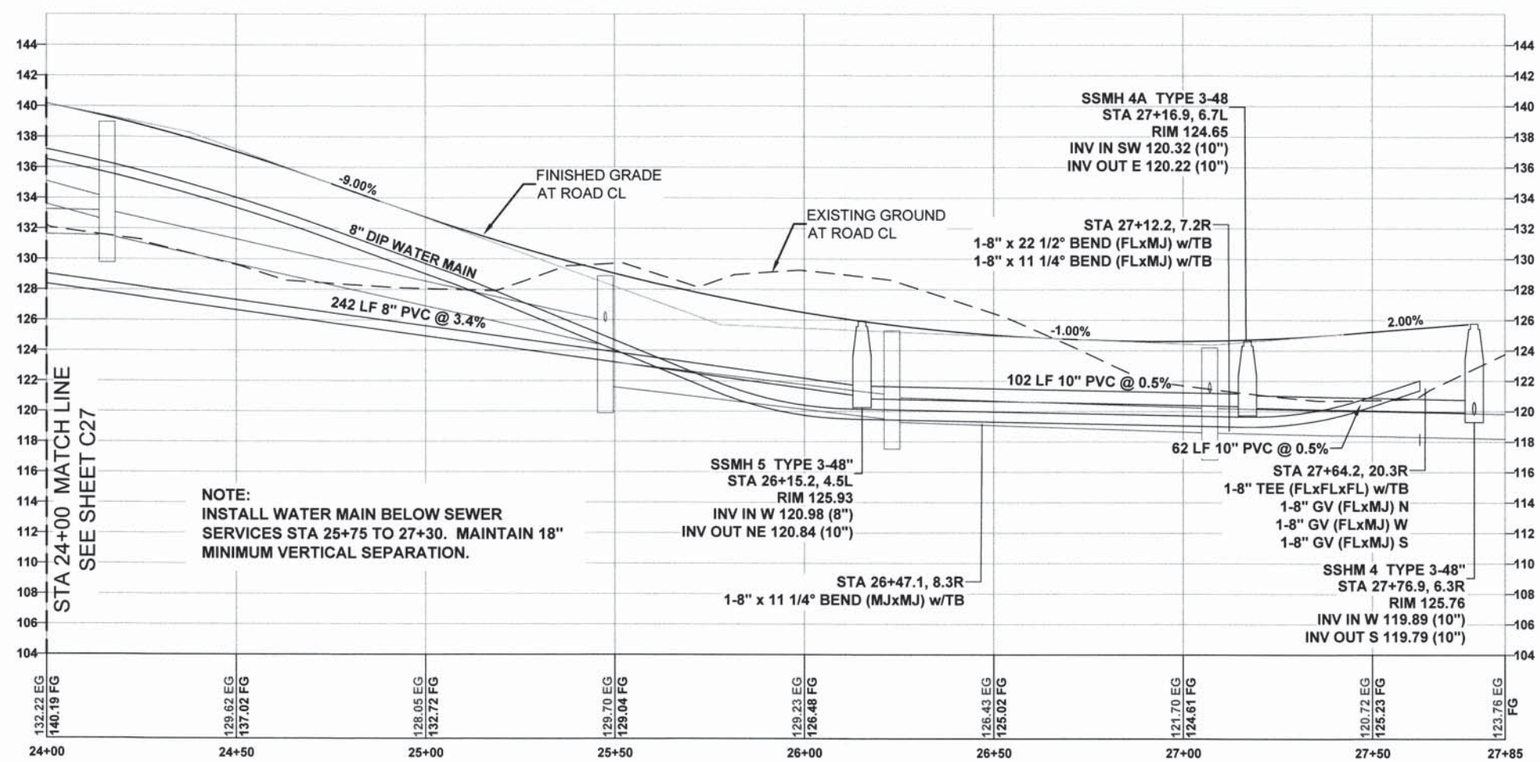


NOTE:
ROAD RATED BOXES REQUIRED FOR WATER METERS WITHIN POTENTIAL DRIVEWAY LOCATIONS. SEE DETAIL SHEET C44.



NOTE:
INSTALL WATER MAIN BELOW SEWER SERVICES STA 25+75 TO 27+30. MAINTAIN 18" MINIMUM VERTICAL SEPARATION.

RECORD DRAWING 7/02/2019

FERNDALE, WASHINGTON
MALLOY TERRACE PUD
PHASE 1 CONSTRUCTION
N. BEULAH SEWER AND WATER

00671.028 7/17/19 KB

CASCADE ENGINEERING GROUP, P.S., INC.
119 Grand Avenue, Suite D
Bellingham, Washington 98225
(360) 306-8161

REVISIONS	DATE
CITY COMMENTS	7/25/18
REV. PROFILE FG ELEVATIONS	8/14/18
CITY COMMENTS	09/05/18
RECORD INFO	07/02/19

RECORD DRAWING

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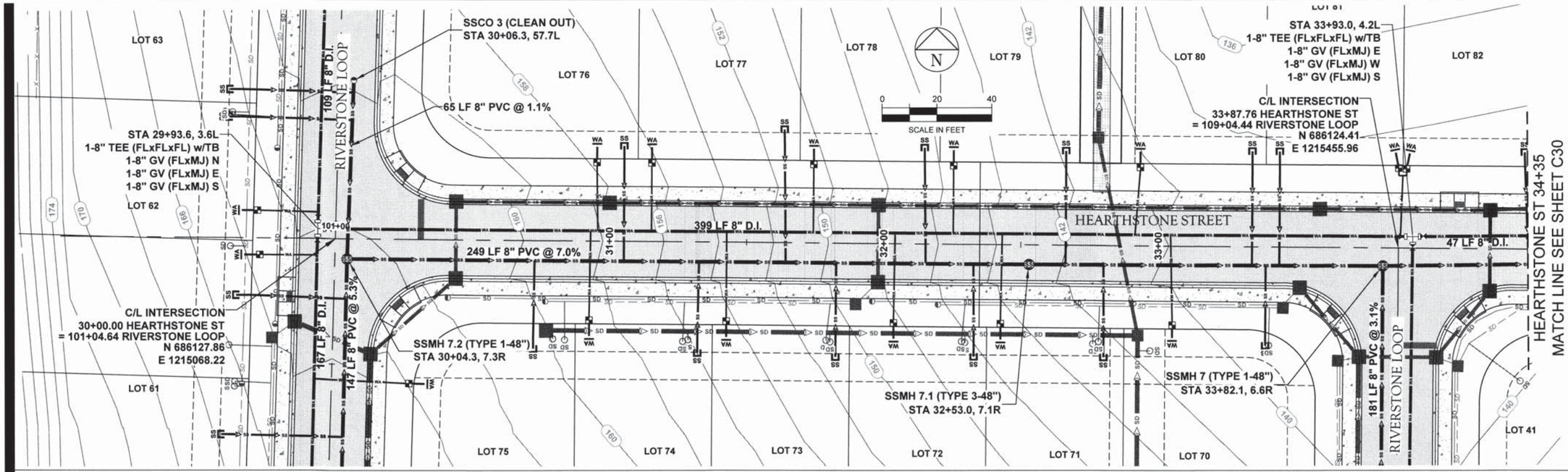

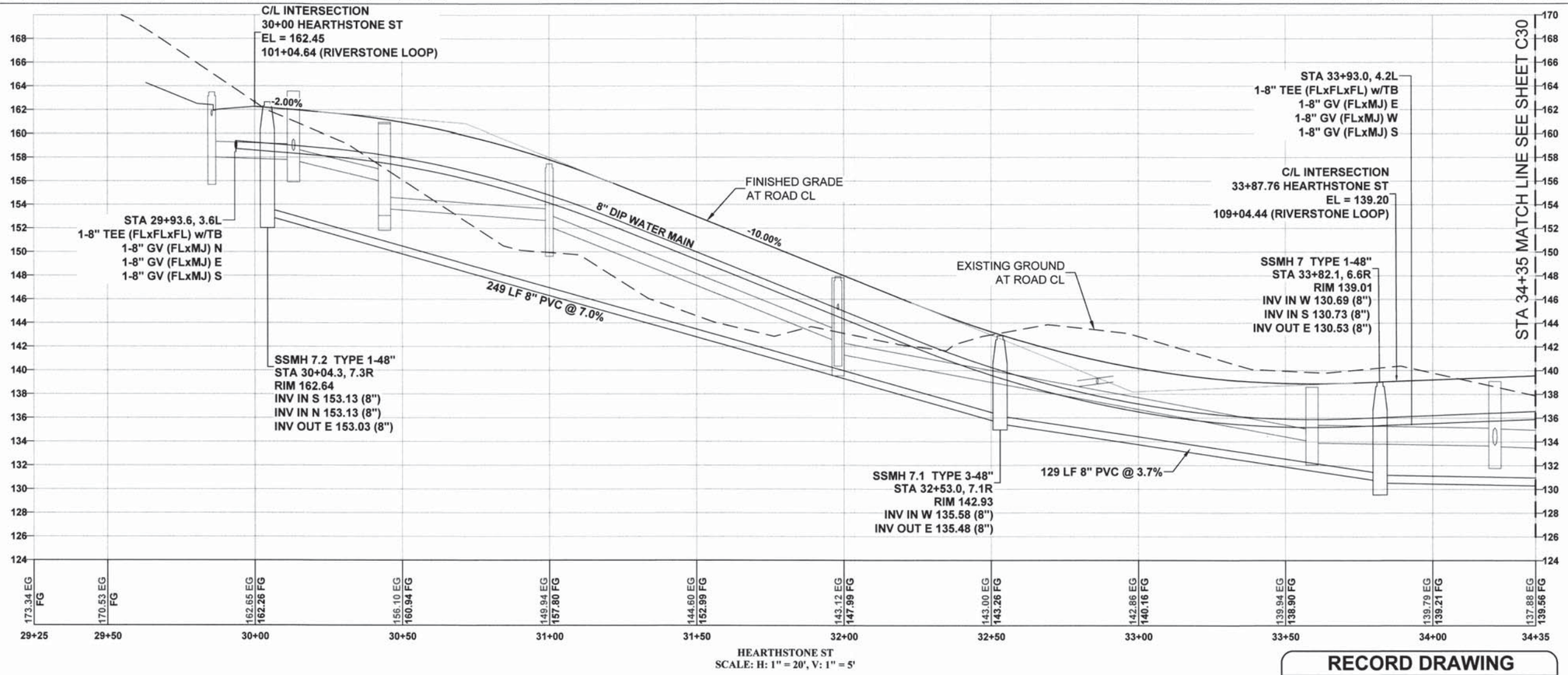

RECORD DRAWING 7/02/2019

FERNDALE, WASHINGTON

MALLOY TERRACE PUD
PHASE 1 CONSTRUCTION

HEARTHSTONE ST SEWER AND WATER

00671.029 7/17/19 KB

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(360) 306-8161

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CITY COMMENTS	09/05/18
RECORD INFO	07/02/19

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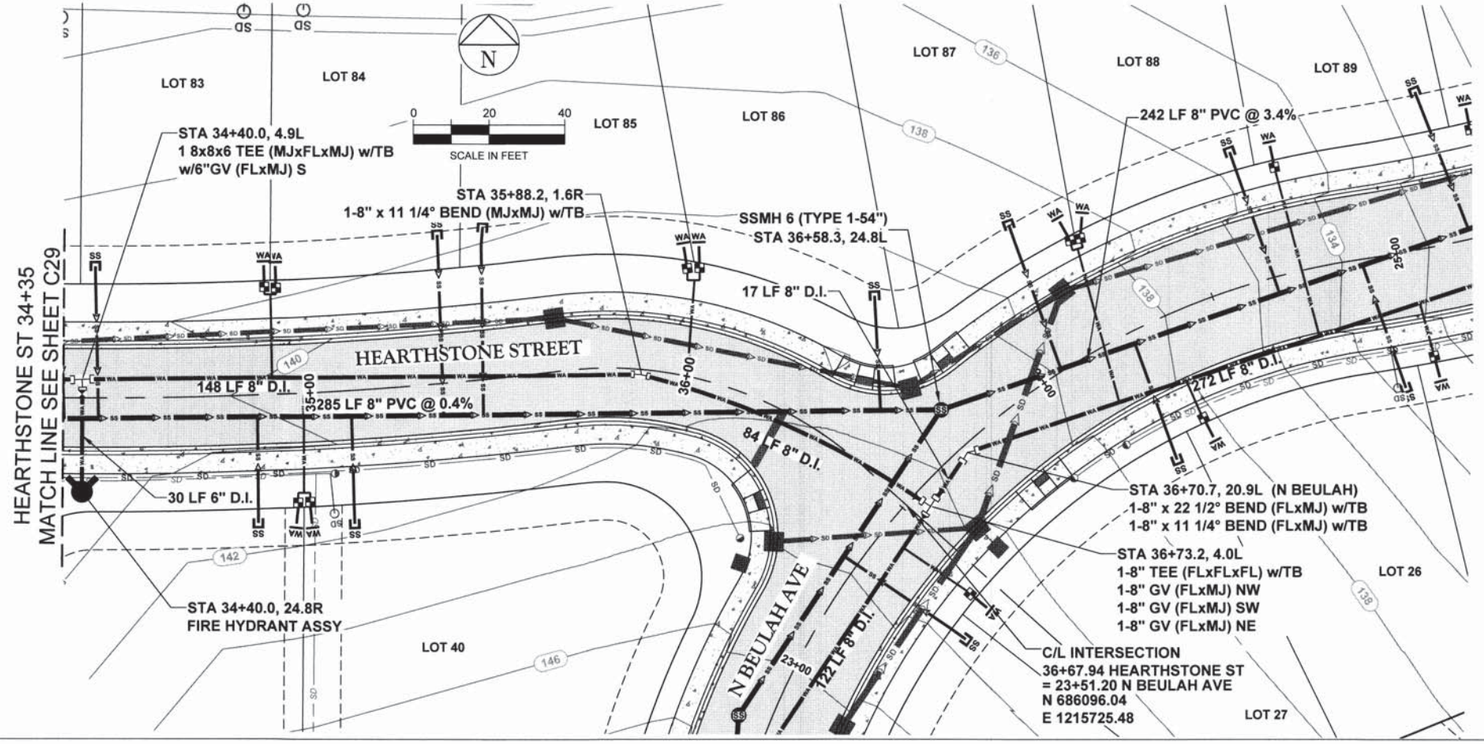

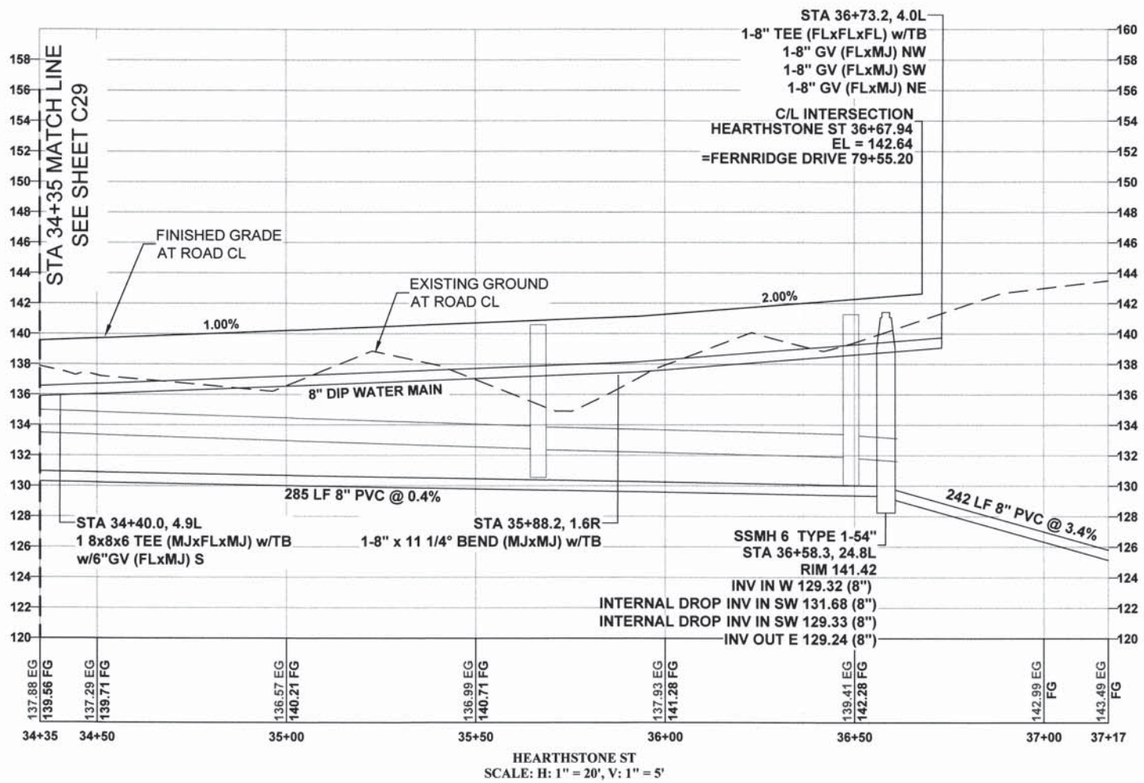

RECORD DRAWING 7/02/2019

FERNDALE, WASHINGTON

MALLOY TERRACE PUD PHASE 1 CONSTRUCTION

HEARTHSTONE ST WATER AND SEWER

00671.030 7/17/19 KB

CRAIG R. PARKINSON — STATE OF WASHINGTON — REGISTERED PROFESSIONAL ENGINEER

CASCADE ENGINEERING GROUP, P.S., INC.
119 Grand Avenue, Suite D
Bellingham, Washington 98225
(360) 306-8161

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CITY COMMENTS	09/05/18
RECORD INFO	07/02/19

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C30
OF

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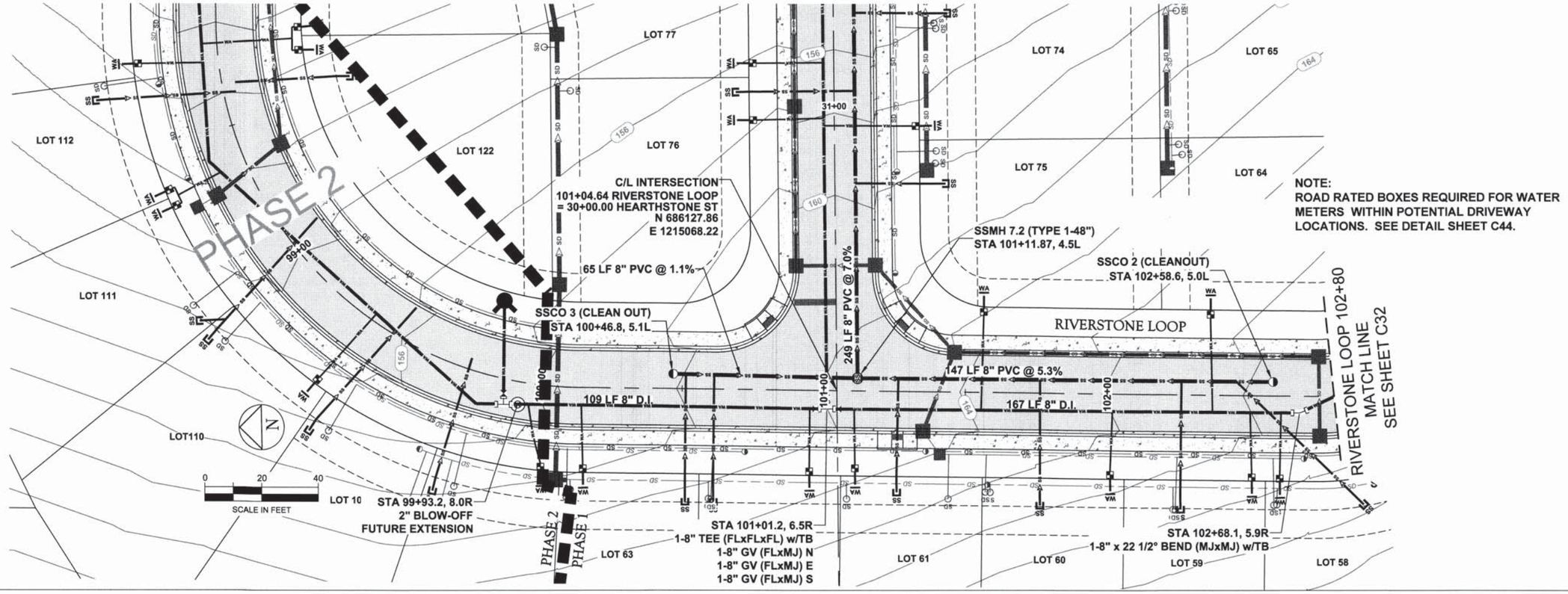

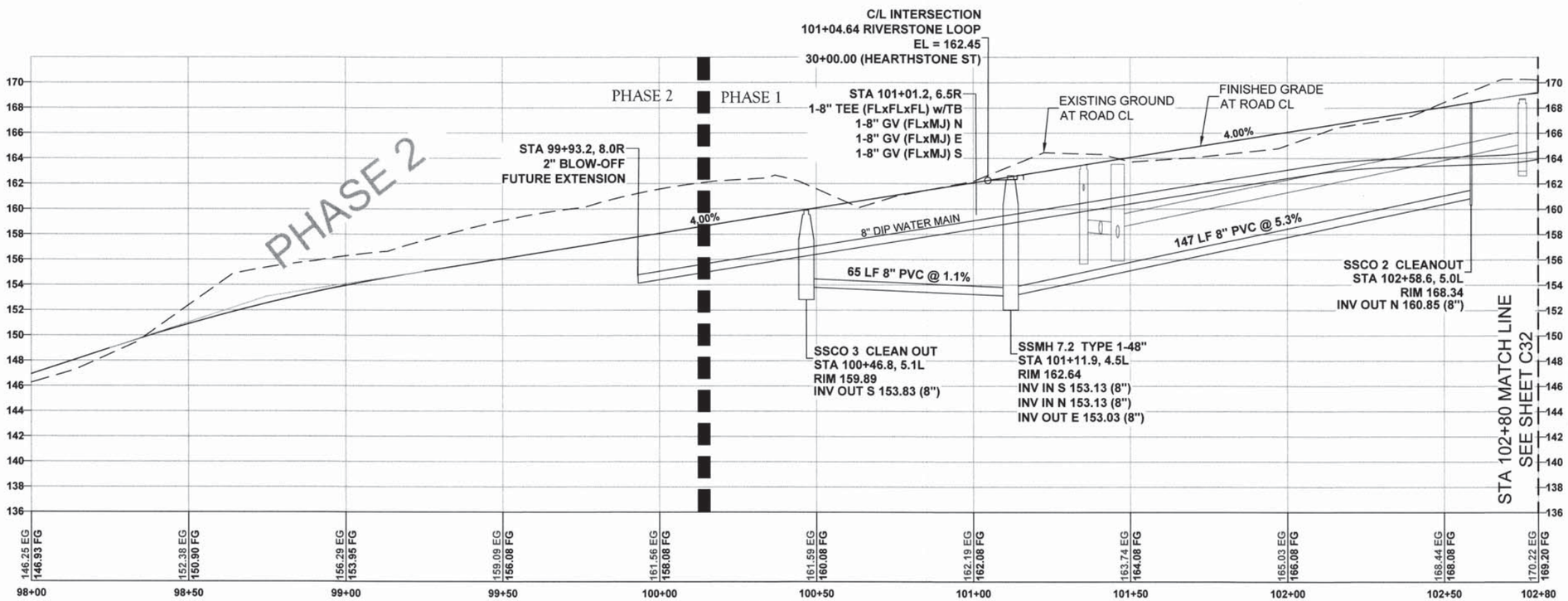

RIVERSTONE LOOP
SCALE: H: 1" = 20', V: 1" = 5'

RECORD DRAWING

RECORD DRAWING NOTE:
AS-BUILT INFORMATION FOR ALL MANHOLE AND CATCH BASIN RIM AND PIPE INVERT ELEVATIONS HAS BEEN PROVIDED BY CONTRACTOR. SURVEYED 5/26/19 TO 6/14/19

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RECORD DRAWING 7/02/2019

FERNDALE, WASHINGTON
MALLOY TERRACE PUD
PHASE 1 CONSTRUCTION
RIVERSTONE LOOP SEWER AND WATER

00671.031 7/17/19 KB

CRAIG R. PARKINSON
STATE OF WASHINGTON
27783
REGISTERED PROFESSIONAL ENGINEER

CASCADE ENGINEERING GROUP, P.S., INC.
119 Grand Avenue, Suite D
Bellingham, Washington 98225
(360) 306-8161

REVISIONS	DATE
CITY COMMENTS	7/25/18
CITY COMMENTS	09/05/18
ADJUST SSCO-3	11/29/18
LOT LINE & SERVICES REV.	12/04/18
RECORD INFO	07/02/19

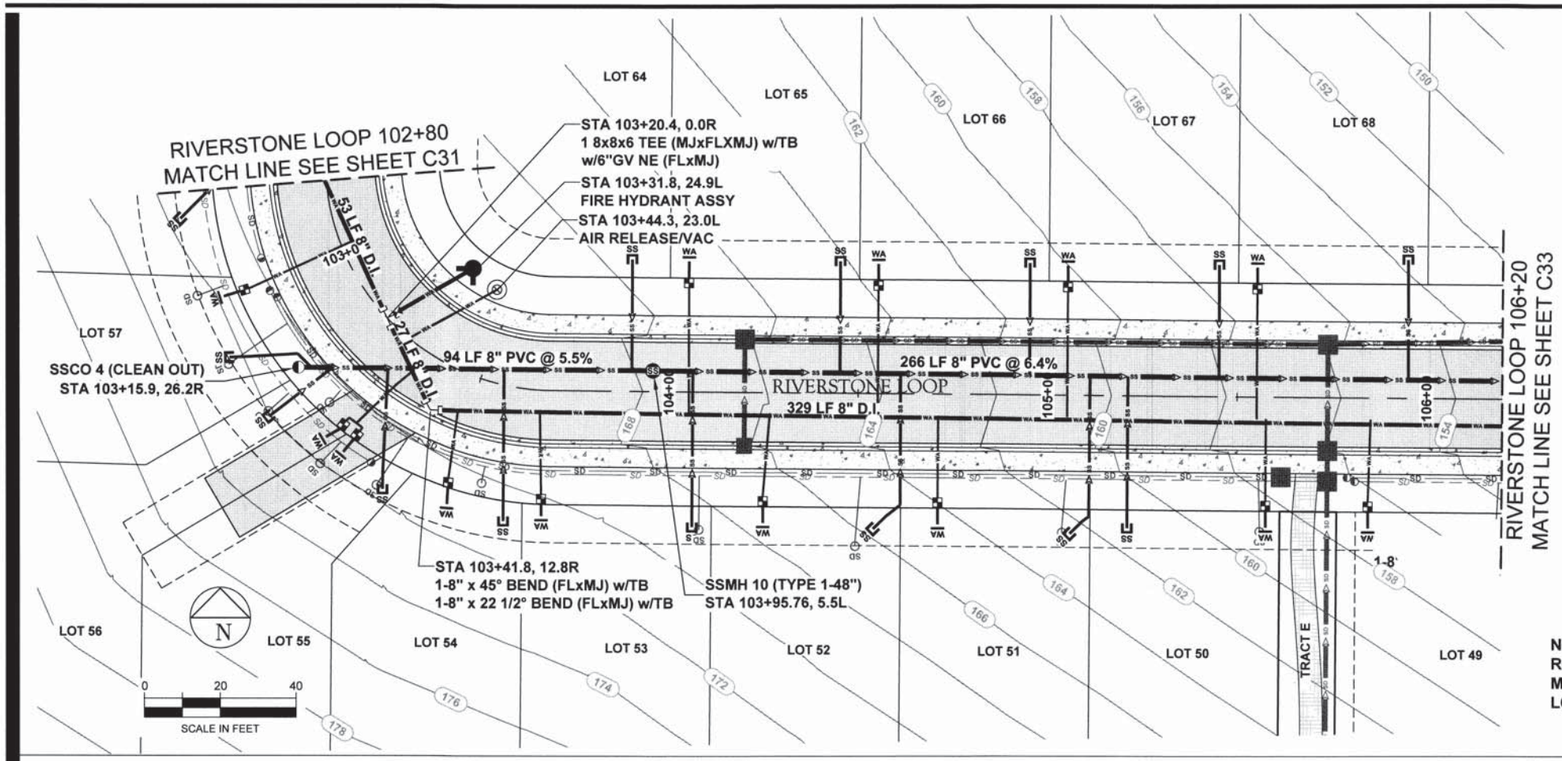
DATE: 2/9/2018
DESIGN:
DRAWN: LCP
CHECKED:

SCALE: AS SHOWN

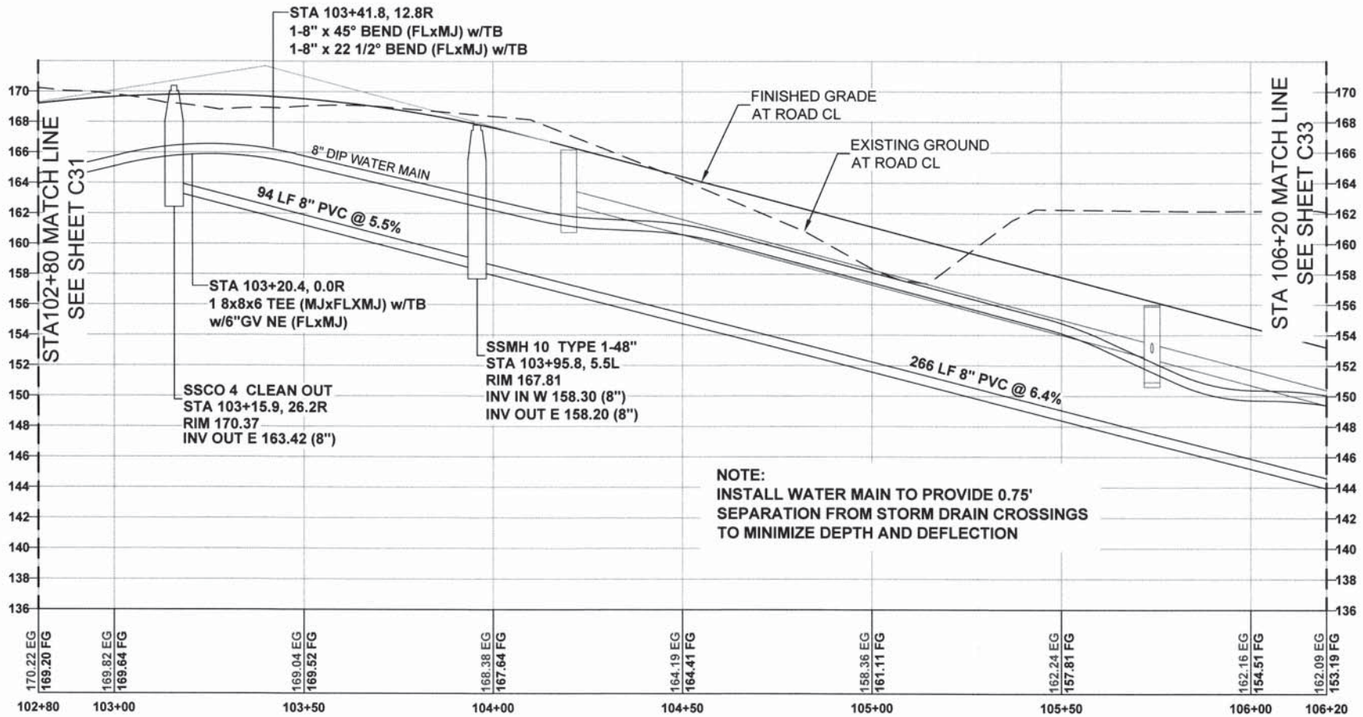
PROJECT NUMBER:
MDGX0001

SHEET NO.
C31
OF

07/03/2019 10:36AM P:\M\MDGX0001\0400CAD\DWG\Sheets\PHASE 1 CONSTRUCTION PLANS\C31-C33 RIVERSTONE LOOP SS-WTR.dwg



NOTE:
ROAD RATED BOXES REQUIRED FOR WATER METERS WITHIN POTENTIAL DRIVEWAY LOCATIONS. SEE DETAIL SHEET C44.



NOTE:
INSTALL WATER MAIN TO PROVIDE 0.75' SEPARATION FROM STORM DRAIN CROSSINGS TO MINIMIZE DEPTH AND DEFLECTION

RIVERSTONE LOOP
SCALE: H: 1" = 20', V: 1" = 5'

RECORD DRAWING 7/02/2019

FERNDALE, WASHINGTON
MALLOY TERRACE PUD
PHASE 1 CONSTRUCTION
RIVERSTONE LOOP SEWER AND WATER
00671.032 7/17/19 KB

CRAIG R. PARKINSON
STATE OF WASHINGTON
25793
REGISTERED PROFESSIONAL ENGINEER

CASCADE ENGINEERING GROUP, P.S., INC.
119 Grand Avenue, Suite D
Bellingham, Washington 98225
(360) 306-8161

REVISIONS	DATE
CITY COMMENTS	7/25/18
REV. PROFILE FG ELEVATIONS	8/14/18
CITY COMMENTS	09/05/18
LOT LINE & SERVICES REV.	12/04/18
RECORD INFO	07/02/19

RECORD DRAWING

RECORD DRAWING NOTE:
AS-BUILT INFORMATION FOR ALL MANHOLE AND CATCH BASIN RIM AND PIPE INVERT ELEVATIONS HAS BEEN PROVIDED BY CONTRACTOR. SURVEYED 5/26/19 TO 6/14/19

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Call: TOLL FREE
1-800-424-5555

APPROVED
JUL 09 2019
CITY OF FERNDALE
PUBLIC WORKS DEPARTMENT

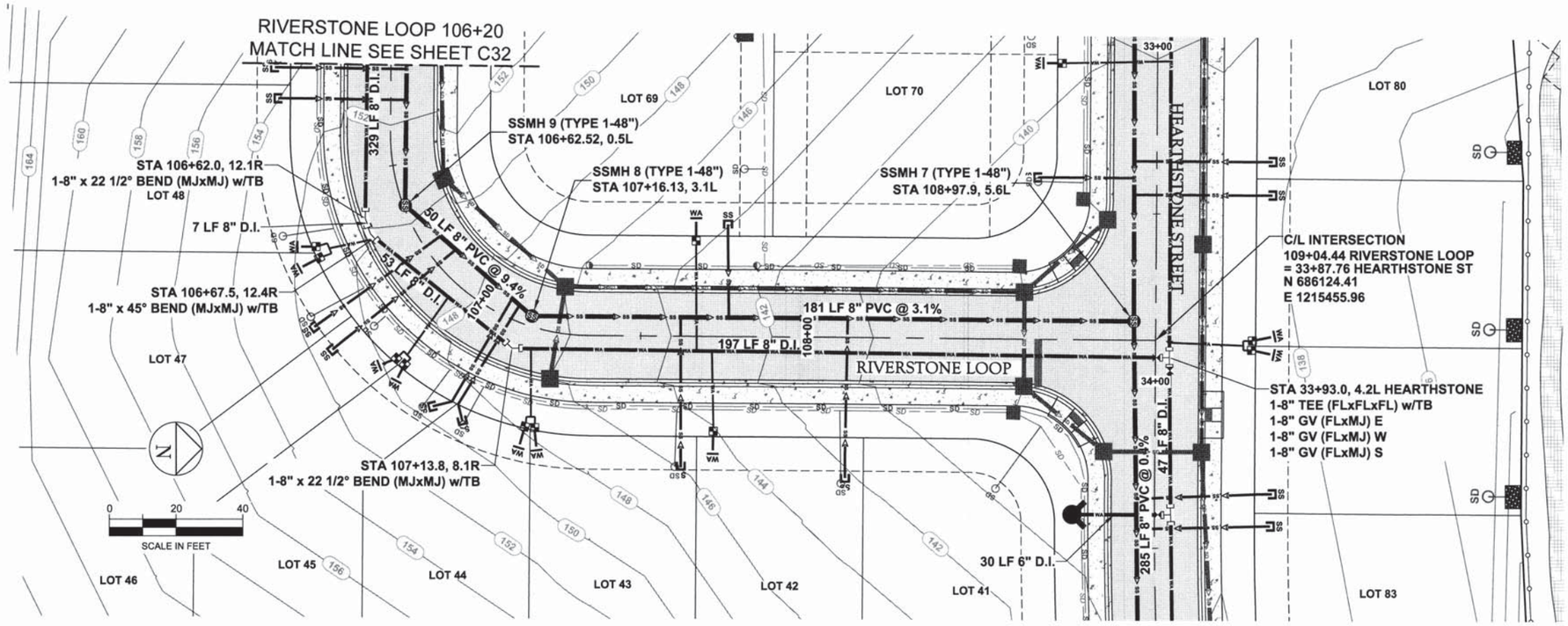
DATE: 2/9/2018
DESIGN:
DRAWN: LCP
CHECKED:

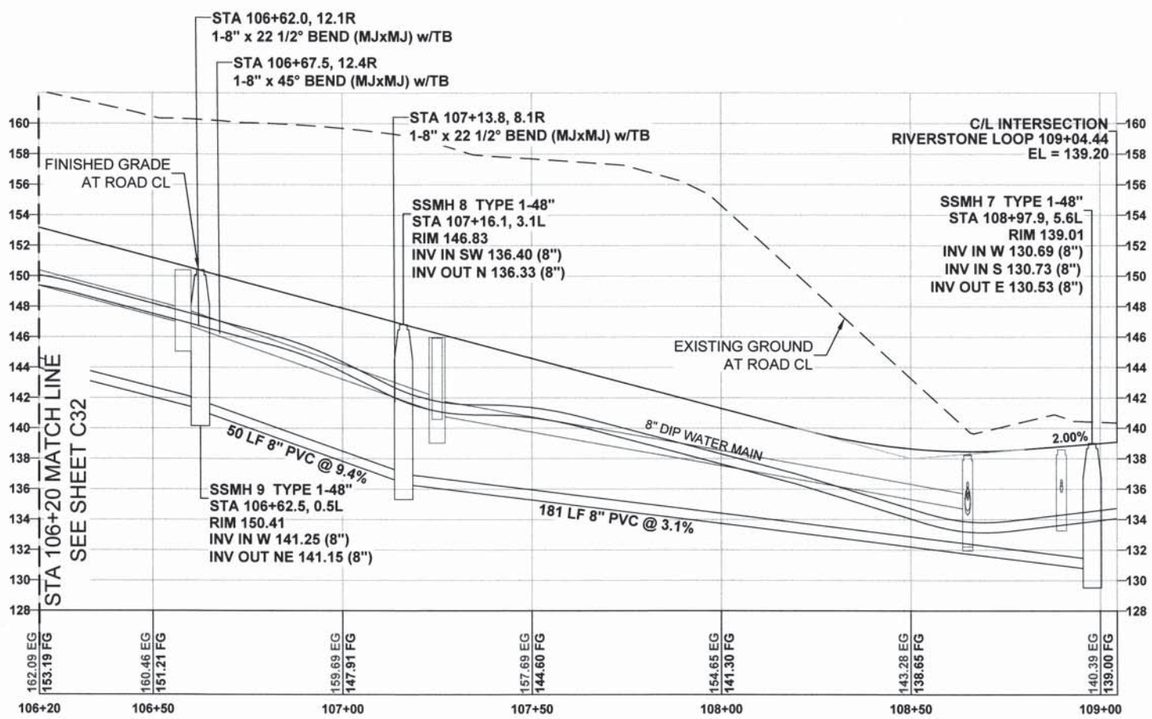
SCALE: AS SHOWN

PROJECT NUMBER:
MDGX0001

SHEET NO.
C32
OF

07/03/2019 10:36AM P:\M\MDGX0001\0400CAD\DWG\Sheets\PHASE 1 CONSTRUCTION PLANS\C31-C33 RIVERSTONE LOOP SS-WTR.dwg





RIVERSTONE LOOP
SCALE: H: 1" = 20', V: 1" = 5'

NOTE:
INSTALL WATER MAIN TO PROVIDE 0.75' SEPARATION FROM STORM DRAIN CROSSINGS TO MINIMIZE DEPTH AND DEFLECTION

RECORD DRAWING

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JUL 09 2019
CITY OF FERNDALE
PUBLIC WORKS DEPARTMENT

RECORD DRAWING 7/02/2019

FERNDALE, WASHINGTON
MALLOY TERRACE PUD
PHASE 1 CONSTRUCTION
RIVERSTONE LOOP SEWER AND WATER

00671.033 7/17/19 KB

CASCADE ENGINEERING GROUP, P.S., INC.
119 Grand Avenue, Suite D
Bellingham, Washington 98225
(360) 306-8161

REVISIONS	DATE
CITY COMMENTS	7/25/18
REV. PROFILE FG ELEVATIONS	8/14/18
CITY COMMENTS	09/05/18
RECORD INFO	07/02/19

DATE: 2/9/2018
DESIGN:
DRAWN: LCP
CHECKED:

SCALE: AS SHOWN

PROJECT NUMBER:
MDGX0001

SHEET NO.
C33
OF

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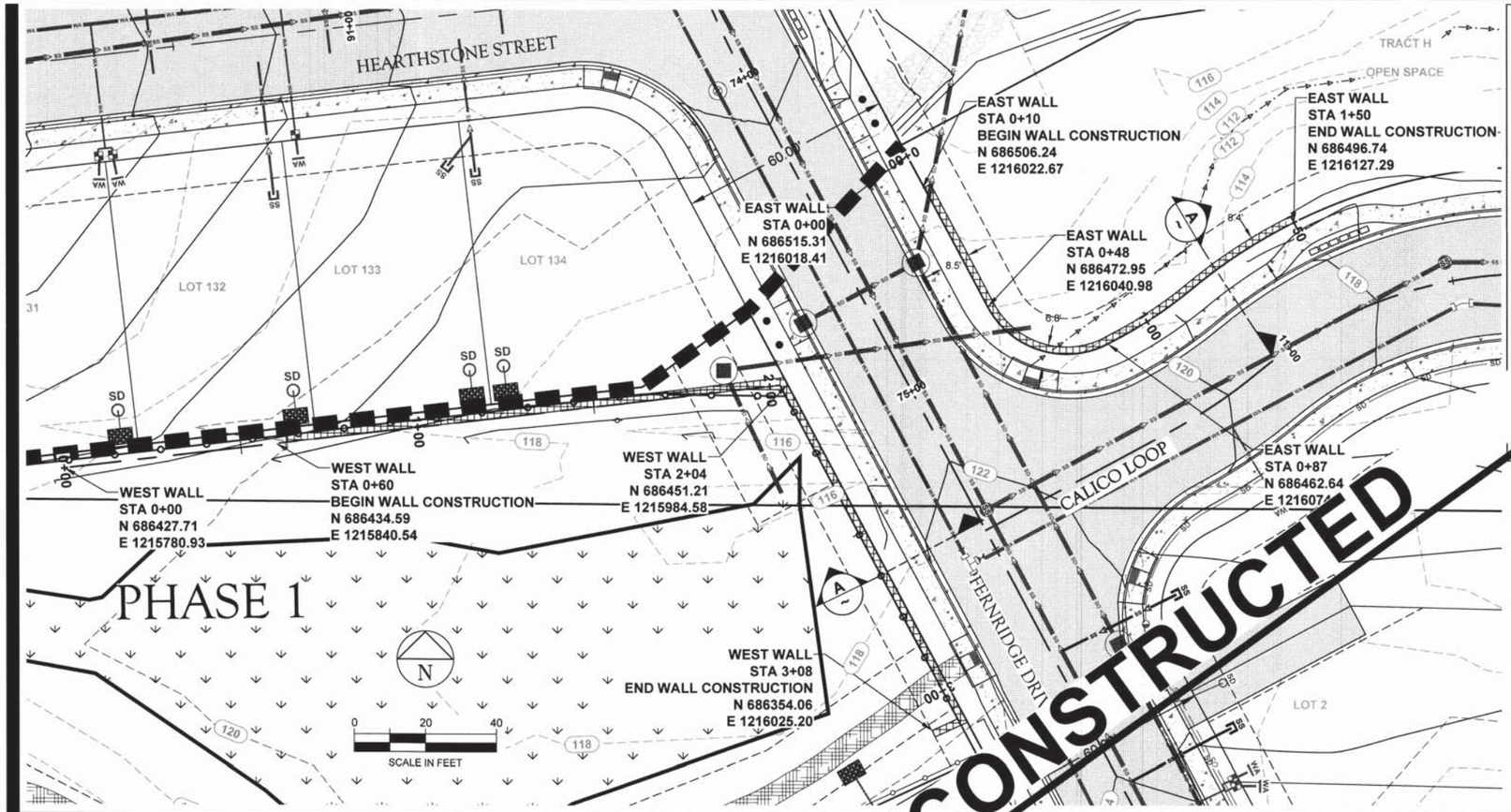
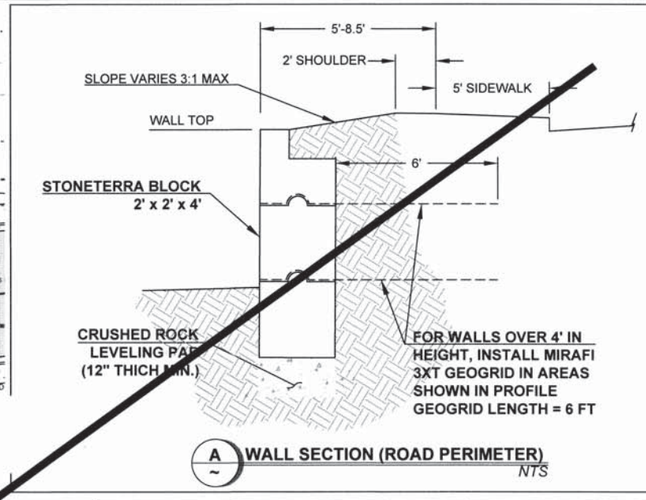
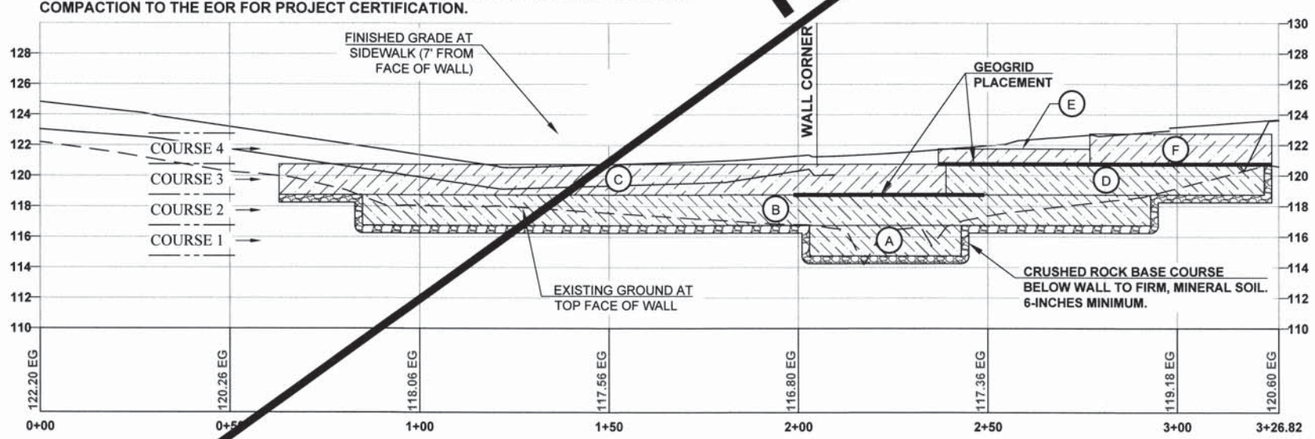




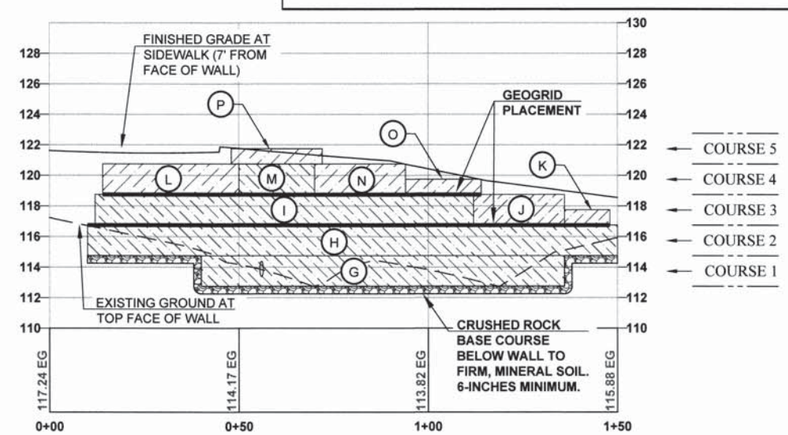
Stone Terra Block Count Schedule

	Segment ID	Course #	Top of Course El.	Length (Ft.)	Full Block 24"	Full Bench 24"	Bench 12"
WEST WALL	A	1	116.75	40	10		
	B	2	118.75	208	52		
	C	3	120.75	176		44	
	D	3	120.75	84	21		
	E	4	121.75	40			10
	F	4	122.75	48		12	
EAST WALL	G	1	114.75	94	23		
	H	2	116.75	140	35		
	I	3	118.75	100	25		
	J	3	118.75	24		6	
	K	3	117.75	12			3
	L	4	120.75	36		9	
	M	4	120.75	24		6	
	N	4	120.75	24		6	
	O	4	119.75	20			5
	P	5	121.75	24			6

NOTE:
ALL PROPOSED PROJECT RETAINING WALLS EXCEEDING 4' IN HEIGHT REQUIRE A BUILDING PERMIT. STRUCTURAL PLANS AND SPECIFICATIONS MUST BE SUBMITTED TO THE CITY OF FERNDALE BUILDING DEPARTMENT FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION. CIVIL ENGINEER AND STRUCTURAL ENGINEER TO COLLABORATE FOR DESIGN AND PLACEMENT PROVIDING INFORMATION TO BOTH DEPARTMENTS FOR CLARITY FOR PLACEMENT AND CONSTRUCTION. A LICENSED GEO TECHNICAL ENGINEER WILL BE REQUIRED TO OVERSEE CONSTRUCTION AND PLACEMENT OF THESE WALLS VERIFYING SOILS AND COMPACTION TO THE EOR FOR PROJECT CERTIFICATION.



WEST WALL
SCALE: H: 1" = 20', V: 1" = 5"



EAST WALL
SCALE: H: 1" = 20', V: 1" = 5"

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JUL 09 2019
BY CITY OF FERNDALE
PUBLIC WORKS DEPARTMENT

RECORD DRAWING 7/02/2019

FERNDALE, WASHINGTON
MALLOY TERRACE PUD
PHASE 1 CONSTRUCTION
RETAINING WALL PLAN AND PROFILE

00671.034 7/17/19 KB

CASCADE ENGINEERING GROUP, P.S., INC.
119 Grand Avenue, Suite D
Bellingham, Washington 98225
(360) 306-8161

REVISIONS	DATE
CITY COMMENTS	7/25/18
CITY COMMENTS	09/05/18
CITY COMMENTS	09/10/18
RECORD INFO	07/02/19

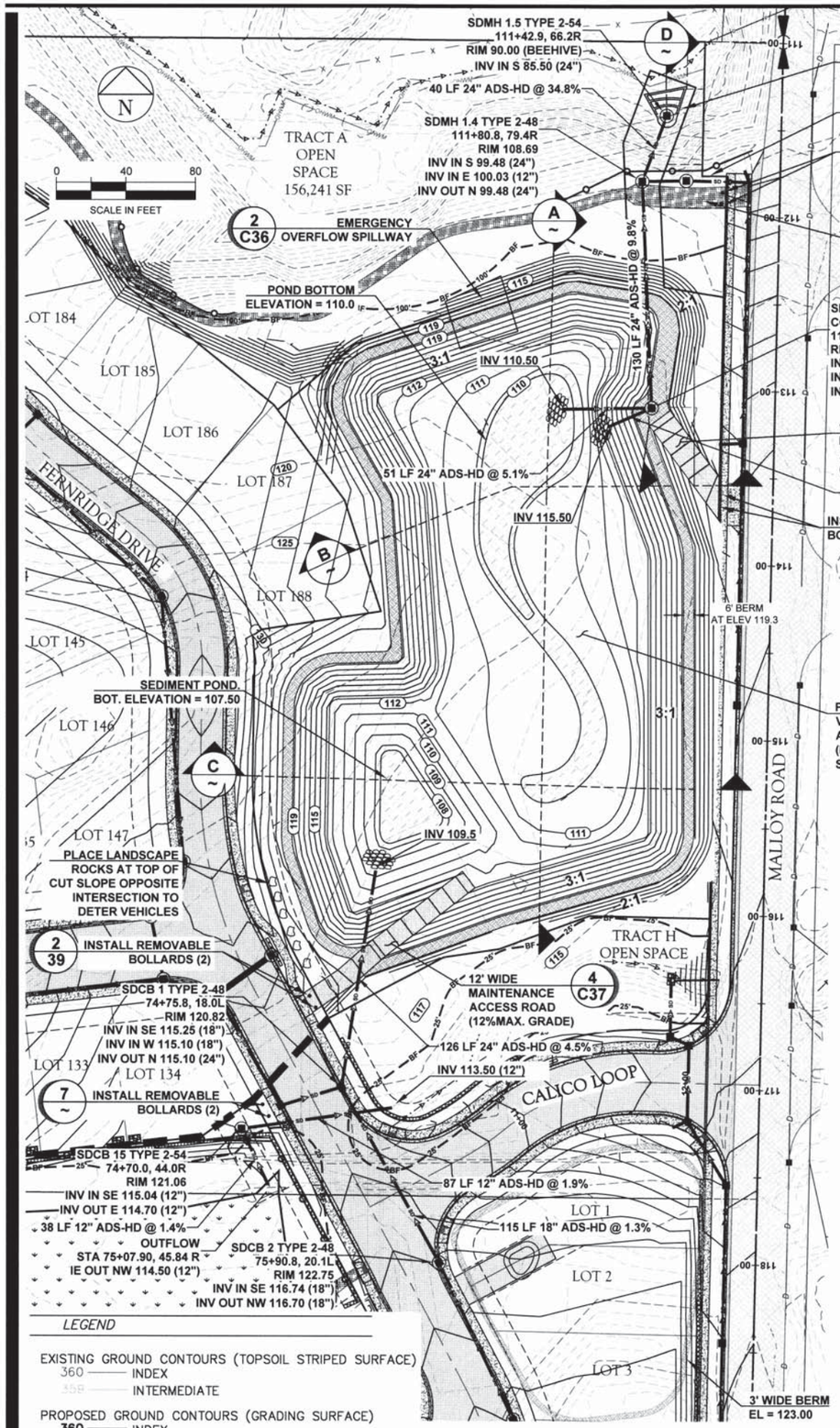
DATE: 2/9/2018
DESIGN:
DRAWN: LCP
CHECKED:

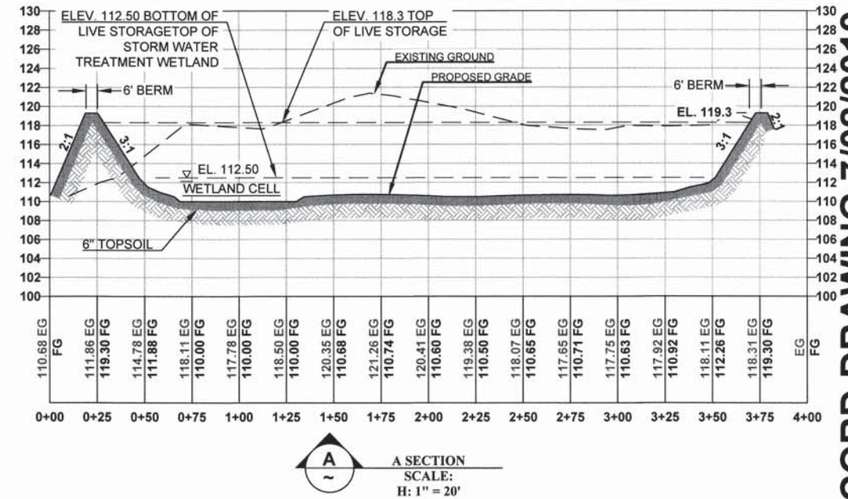
SCALE: AS SHOWN

PROJECT NUMBER:
MDGX0001

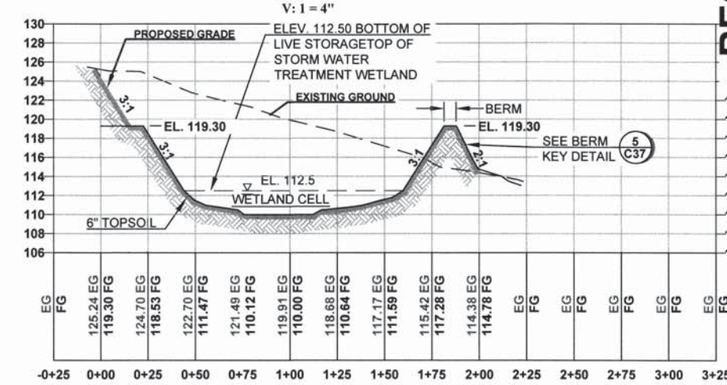
SHEET NO.
C34
OF

07/03/2019 10:38AM P:\M\MDGX0001\0400CAD\DWG\Sheets\PHASE 1 CONSTRUCTION PLANS\C34-WALL PLAN AND PROFILE.dwg





A SECTION
SCALE:
H: 1" = 20'
V: 1 = 4"



B SECTION - WETLAND CELL
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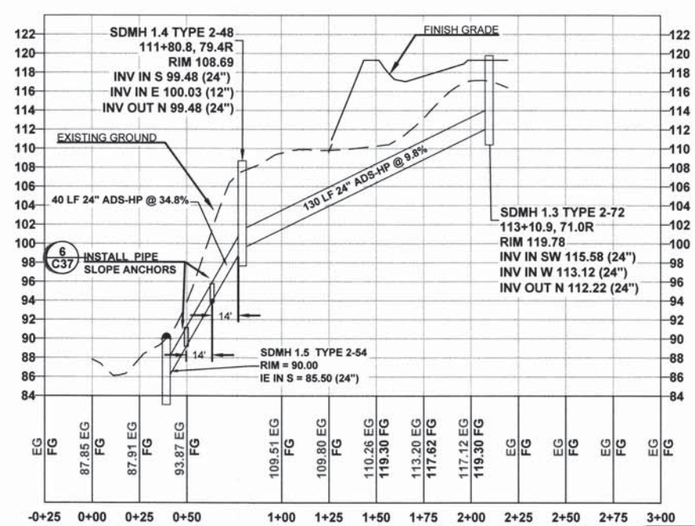
V: 1 = 4"



D POND DETENTION
SCALE:
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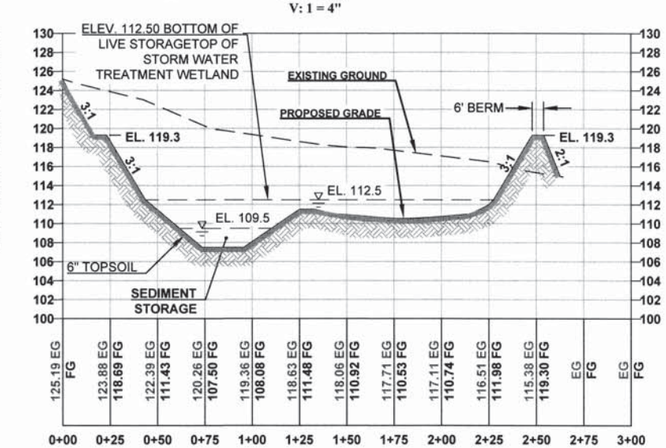
V: 1 = 4"



C SECTION - SEDIMENT CELL
SCALE:
H: 1" = 20'
V: 1 = 4"

RECORD DRAWING

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RECORD DRAWING 7/02/2019

FERNDALE, WASHINGTON
MALLOY TERRACE PUD
PHASE 1 CONSTRUCTION
POND CONSTRUCTION
00671.035 7/17/19 KB

CRAIG R. PARKINSON STATE OF WASHINGTON 25783 REGISTERED PROFESSIONAL ENGINEER

CASCADE ENGINEERING GROUP, P.S., INC.
119 Grand Avenue, Suite D
Bellingham, Washington 98225
(360) 306-8161

REVISIONS	DATE
CITY COMMENTS	7/25/18
STORM DRAIN REV.	7/25/18
REV. PROFILE FG ELEVATIONS	8/14/18
CITY COMMENTS	09/05/18
RECORD INFO	07/02/19

DATE: 2/9/2018
DESIGN:
DRAWN: LCP
CHECKED:

SCALE: AS SHOWN

PROJECT NUMBER:
MDGX0001

SHEET NO.
C35
OF

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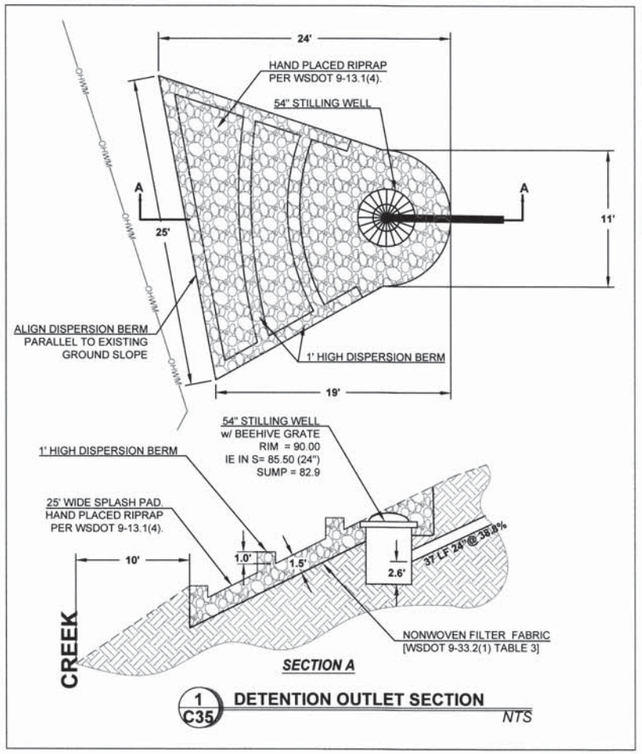
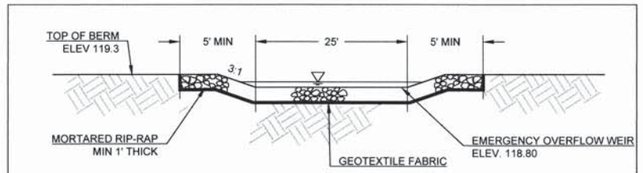


1 C35 DETENTION OUTLET SECTION
NTS



2 C35 EMERGENCY OVERFLOW SPILLWAY
NTS

NOTES:

1. THE PIPE SUPPORTS AND THE FLOW RESTRICTOR SHALL BE CONSTRUCTED OF THE SAME MATERIAL AND BE ANCHORED AT A MAXIMUM SPACING OF 36". ATTACH THE PIPE SUPPORTS TO THE MANHOLE WITH 5/8" STAINLESS STEEL EXPANSION BOLTS OR EMBED THE SUPPORTS INTO THE MANHOLE WALL 2".
2. THE FLOW RESTRICTOR/SEPARATOR SHALL BE FABRICATED FROM ONE OF THE FOLLOWING MATERIALS:
   0.060" CORRUGATED ALUMINUM ALLOY DRAIN PIPE
   0.064" ALUMINIZED STEEL DRAIN PIPE
   0.060" ALUMINUM ALLOY FLAT SHEET, IN ACCORDANCE WITH ASTM B 209M, 5052 H32 SHALL HAVE TREATMENT 1.
3. THE FRAME AND LADDER OR STEPS ARE TO BE OFFSET SO THAT: THE SHEAR GATE IS VISIBLE FROM THE TOP; THE CLIMB-DOWN SPACE IS CLEAR OF THE RISER AND GATE; THE FRAME IS CLEAR OF THE CURB.
4. THE MULTI-ORIFICE ELBOWS MAY BE LOCATED AS SHOWN, OR ALL PLACED ON ONE SIDE OF THE RISER TO ASSURE LADDER CLEARANCE.
5. RESTRICTOR PLATE WITH ORIFICE AS SHOWN. THE OPENING IS TO BE CUT ROUND AND SMOOTH.
6. THE SHEAR GATE SHALL BE MADE OF ALUMINUM ALLOY IN ACCORDANCE WITH ASTM B 26 AND ASTM B 275, DESIGNATION ZG32A; OR CAST IRON IN ACCORDANCE WITH ASTM A 48, CLASS 30B.

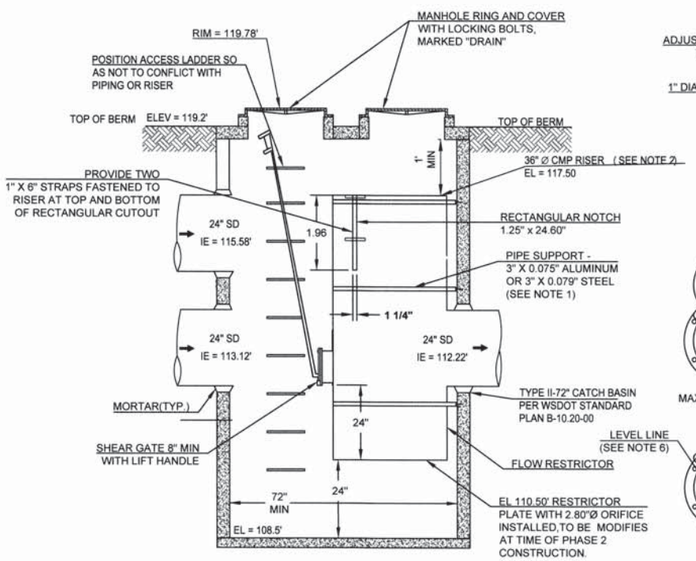
   THE LIFT HANDLE SHALL BE MADE OF A SIMILAR METAL TO THE GATE (TO PREVENT GALVANIC CORROSION), IT MAY BE OF SOLID ROD OR HOLLOW TUBING, WITH ADJUSTABLE HOOK AS REQUIRED.

   A NEOPRENE RUBBER GASKET IS REQUIRED BETWEEN THE RISER MOUNTING FLANGE AND THE GATE FLANGE.

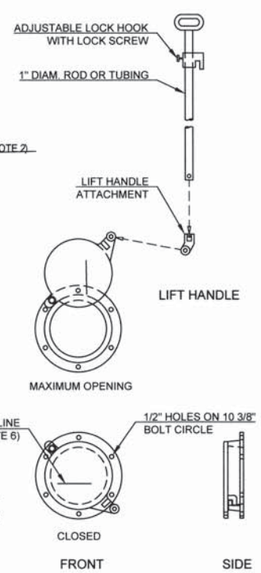
   INSTALL THE GATE SO THAT THE LEVEL-LINE MARK IS LEVEL WHEN THE GATE IS CLOSED.

   THE MATING SURFACES OF THE LID AND THE BODY SHALL BE MACHINED FOR PROPER FIT.

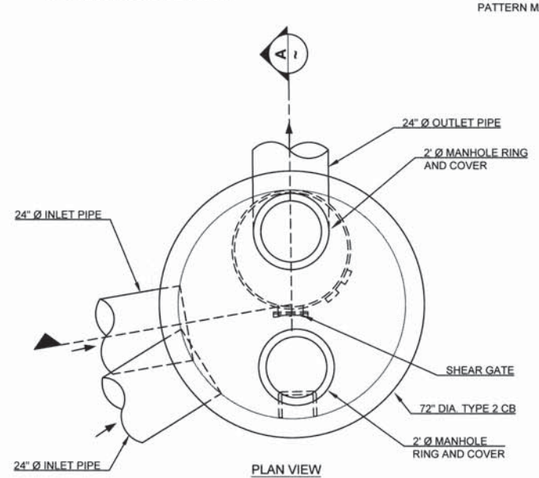
   ALL SHEAR GATE BOLTS SHALL BE STAINLESS STEEL.
7. THE SHEAR GATE MAXIMUM OPENING SHALL BE CONTROLLED BY LIMITED HINGE MOVEMENT, A STOP TAB, OR SOME OTHER DEVICE.
8. ALTERNATE SHEAR GATE DESIGNS ARE ACCEPTABLE IF MATERIAL SPECIFICATIONS ARE MET AND FLANGE BOLT PATTERN MATCHES.



3 C35 OUTLET CONTROL STRUCTURE
NTS



SHEAR GATE DETAILS



PLAN VIEW

RECORD DRAWING

RECORD DRAWING NOTE:
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JUL 09 2019
CITY OF FERDALE
PUBLIC WORKS DEPARTMENT

RECORD DRAWING 7/02/2019

FERNDALE, WASHINGTON
MALLOY TERRACE PUD
PHASE 1 CONSTRUCTION
POND DETAILS

00671.036 7/17/19 KB

CASCADE ENGINEERING GROUP, P.S., INC.
119 Grand Avenue, Suite D
Bellingham, Washington 98225
(360) 306-8161

REVISIONS	DATE
RECORD INFO	07/02/19

DATE: 2/9/2018
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SCALE: AS SHOWN

PROJECT NUMBER:
MDGX0001

SHEET NO.
C36
OF

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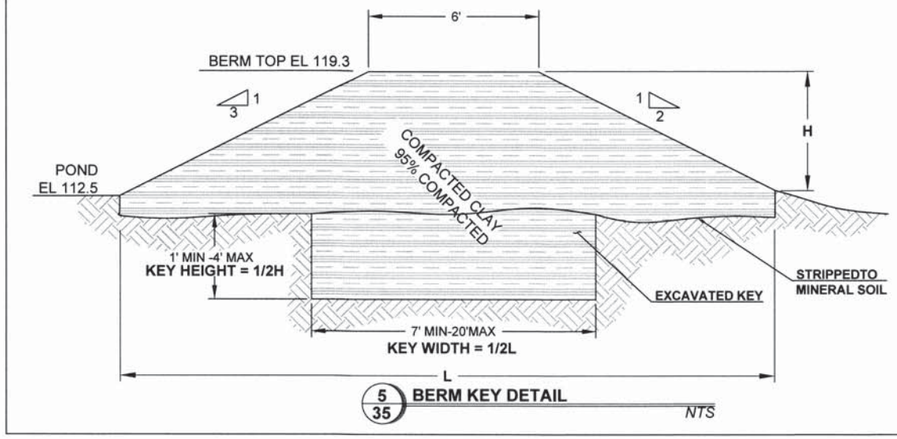
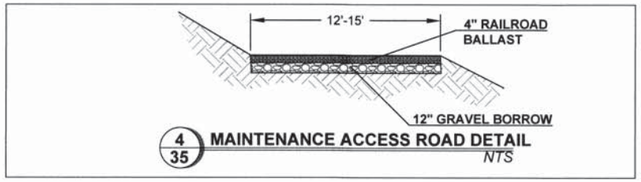


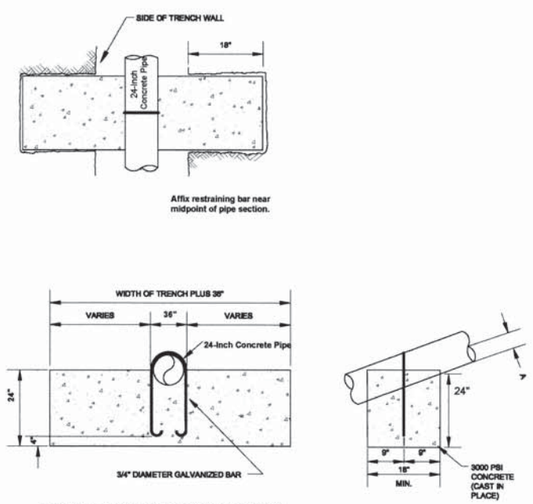
5/35 BERM KEY DETAIL

NTS



4/35 MAINTENANCE ACCESS ROAD DETAIL

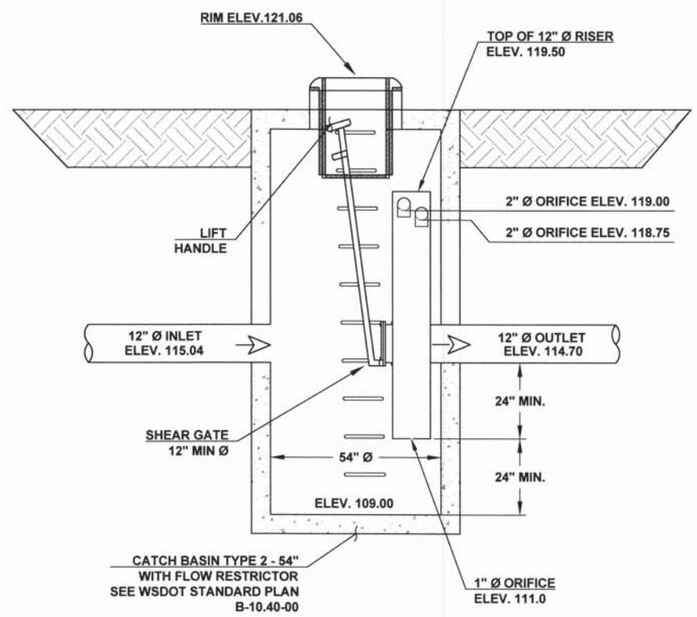
NTS



PROVIDE CONCRETE SLOPE ANCHORS AT 20-FOOT SPACING MAXIMUM.

6/35 STORM MAIN SLOPE ANCHOR

NTS



1/C12 SDCB 15 54"-TYPE 2 CATCH BASIN WETLAND CONTROL STRUCTURE

NTS

RECORD DRAWING 7/02/2019

FERNDALE, WASHINGTON

MALLOY TERRACE PUD
PHASE 1 CONSTRUCTION

POND DETAILS

00671.037 7/17/19 KB

CRAIG R. PARKINSON STATE OF WASHINGTON 23715 REGISTERED PROFESSIONAL ENGINEER

CASCADE ENGINEERING GROUP, P.S., INC.
119 Grand Avenue, Suite D
Bellingham, Washington 98225
(360) 306-8161

REVISIONS	DATE
CITY COMMENTS	7/25/18
CITY COMMENTS	09/05/18
RECORD INFO	07/02/19

RECORD DRAWING

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DATE: 2/9/2018
DESIGN:
DRAWN: LCP
CHECKED:

SCALE: AS SHOWN

PROJECT NUMBER:

MDGX0001

SHEET NO.

C37

OF

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JUL 09 2019
CITY OF FERNDALE
PUBLIC WORKS DEPARTMENT

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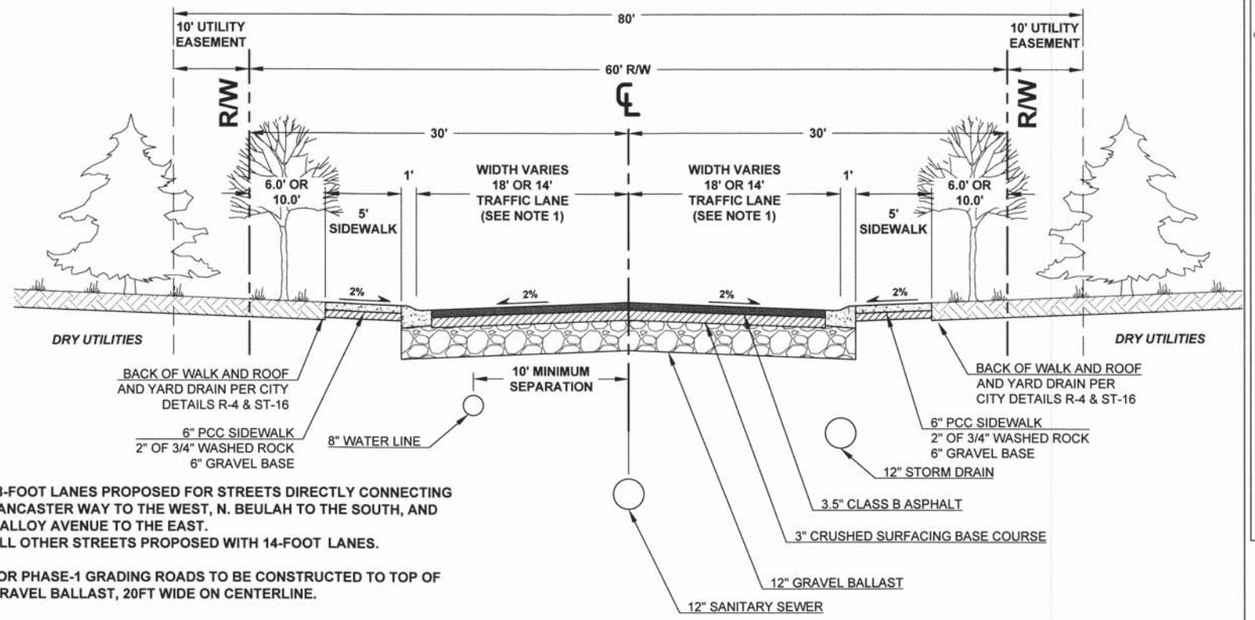


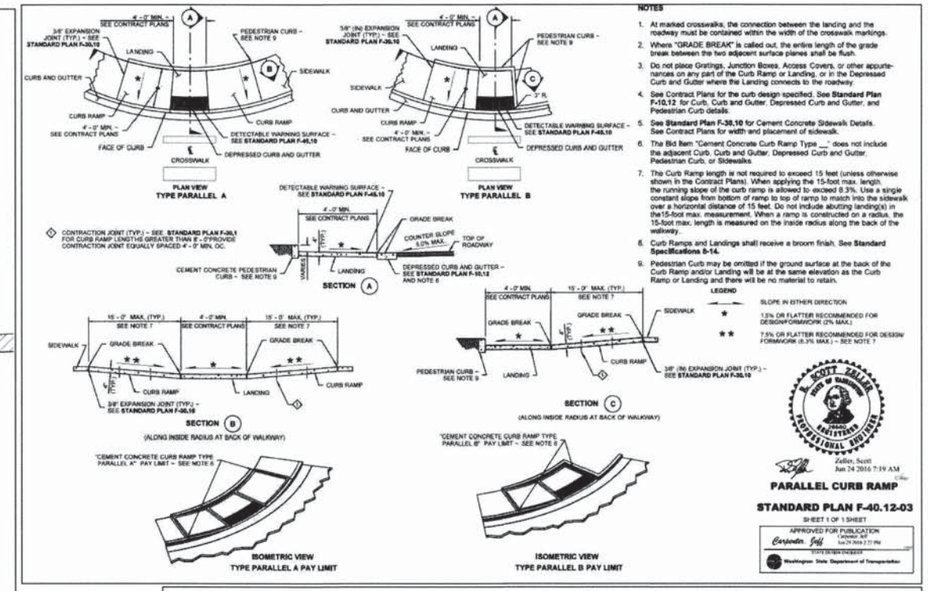
NOTE:

1) 18-FOOT LANES PROPOSED FOR STREETS DIRECTLY CONNECTING LANCASTER WAY TO THE WEST, N. BEULAH TO THE SOUTH, AND MALLOY AVENUE TO THE EAST.
ALL OTHER STREETS PROPOSED WITH 14-FOOT LANES.

2) FOR PHASE-1 GRADING ROADS TO BE CONSTRUCTED TO TOP OF GRAVEL BALLAST, 20FT WIDE ON CENTERLINE.

1 / C8 TYPICAL STREET SECTION

0 1" = 5' 10'



NOTES

1. At marked crosswalks, the connection between the landing and the roadway must be contained within the width of the crosswalk markings.
2. Where "GRADE BREAK" is called out, the entire length of the grade break between the two adjacent surface planes shall be flush.
3. Do not place Gratings, Junction Boxes, Access Covers, or other appurtenances on any part of the Curb Ramp or Landing, or in the Depressed Curb and Gutter where the Landing connects to the roadway.
4. See Contract Plans for the curb design specified. See **Standard Plan F-10.12** for Curb, Curb and Gutter, Depressed Curb and Gutter, and Pedestrian Curb details.
5. See **Standard Plan F-30.10** for Cement Concrete Sidewalk Details. See Contract Plans for width and placement of sidewalk.
6. The Bid Item "Cement Concrete Curb Ramp Type ___" does not include the adjacent Curb, Curb and Gutter, Depressed Curb and Gutter, Pedestrian Curb, or Sidewalks.
7. The Curb Ramp length is not required to exceed 15 feet (unless otherwise shown in the Contract Plans). When applying the 15-foot max. length, the running slope of the curb ramp is allowed to exceed 8.3%. Use a single constant slope from bottom of ramp to top of ramp to match into the sidewalk over a horizontal distance of 15 feet. Do not include abutting landing(s) in the15-foot max. measurement. When a ramp is constructed on a radius, the 15-foot max. length is measured on the inside radius along the back of the walkway.
8. Curb Ramps and Landings shall receive a broom finish. See **Standard Specifications 8-14.**
9. Pedestrian Curb may be omitted if the ground surface at the back of the Curb Ramp and/or Landing will be at the same elevation as the Curb Ramp or Landing and there will be no material to retain.

LEGEND

SLOPE IN EITHER DIRECTION
1.5% OR FLATTER RECOMMENDED FOR DESIGN/FORMWORK (2% MAX.)
7.5% OR FLATTER RECOMMENDED FOR DESIGN/FORMWORK (8.3% MAX.) - SEE NOTE 7

Zeller, Scott
Jun 24 2016 7:19 AM

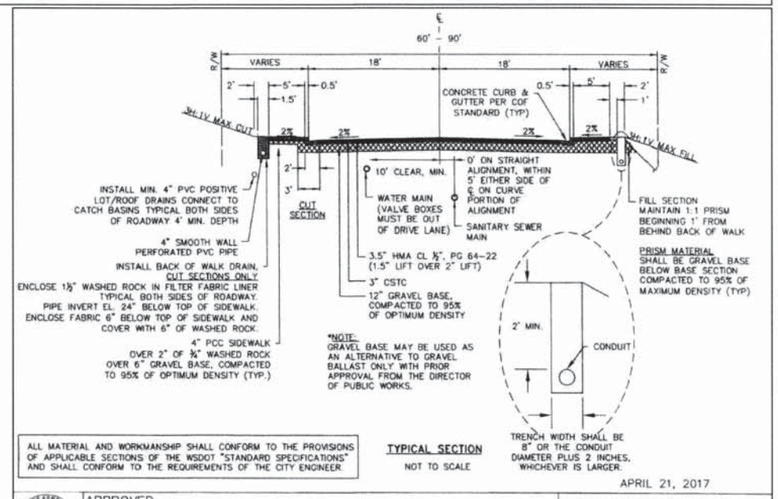
PARALLEL CURB RAMP

STANDARD PLAN F-40.12-03

SHEET 1 OF 1 SHEET

APPROVED FOR PUBLICATION
Carpenter, Jeff
Jun 24 2016 2:17 PM

Washington State Department of Transportation



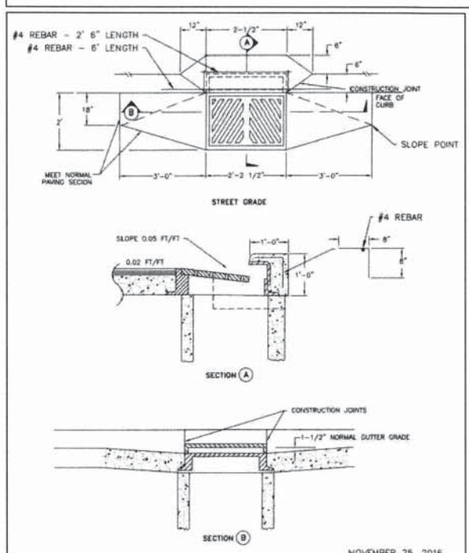
ALL MATERIAL AND WORKMANSHIP SHALL CONFORM TO THE PROVISIONS OF APPLICABLE SECTIONS OF THE WSDOT "STANDARD SPECIFICATIONS" AND SHALL CONFORM TO THE REQUIREMENTS OF THE CITY ENGINEER.

TYPICAL SECTION
NOT TO SCALE

APRIL 21, 2017

APPROVED
Public Works Director — 8/11/17 Date

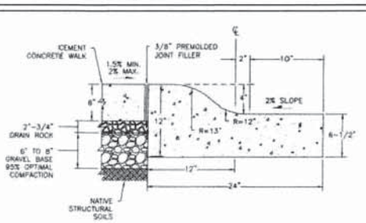
ASPHALT CONCRETE SECTION LOCAL STREET
STANDARD DETAIL R-4
NOT TO SCALE



NOVEMBER 25, 2016

APPROVED
Public Works Director — 8/11/17 Date

THRU-CURB INLET FRAME AND GRATE INSTALLATION
STANDARD DETAIL R-8
NOT TO SCALE



CEMENT CONCRETE ROLLED CURB

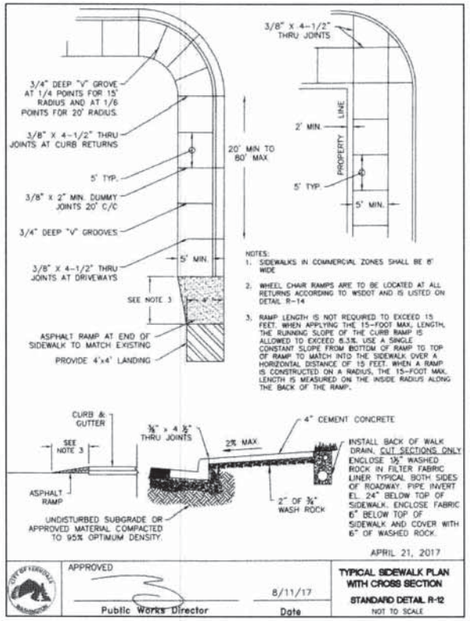
GENERAL NOTES

1. CONTRACTION JOINTS OF ONE OF THESE TYPES SHOWN ABOVE TO BE PLACED 10' C/C COMPLETELY SEVER THE STRUCTURE TO THE POINTS SHOWN. JOINTS MAY BE MADE BY INSERTING MIN. 3/8" BITUMINOUS FILLER DUMMY JOINTS. JOINTS SHALL BE CLEANED AND EDGED.
2. CONCRETE SHALL BE CEMENT CONCRETE CLASS 4000 PSI.
3. FINISHED WORK SHALL NOT VARY MORE THAN 1/8" IN GRADE AND 1/4" IN ALIGNMENT WHEN CHECKED WITH 10' STRAIGHT EDGE.
4. EXPOSED SURFACES SHALL BE BRUSHED WITH A FIBER HAIR BRUSH.
5. WHITE PIGMENTED OR TRANSPARENT CURING COMPOUND SHALL BE APPLIED AS OUTLINED IN THE STANDARD SPECIFICATIONS.
6. FURTHER REQUIREMENTS SHALL BE AS SPECIFIED IN THE STANDARD SPECIFICATIONS.
7. ROLLED CURB SHALL ONLY BE USED WITH A 6" THICK SIDEWALK SECTION.
8. USE OF ROLLED CURB IS NOT PREFERRED AND IS SUBJECT TO PUBLIC WORKS DIRECTOR DISCRETION FOR USE AND APPROVAL.
9. BACK OF WALK DRAINS REQUIRED FOR ALL APPROVED ROLLED CURB APPLICATIONS.
10. USE OF LOUVERED GRATES REQUIRED FOR ALL APPROVED ROLLED CURB APPLICATIONS.

APRIL 27, 2018

APPROVED
Public Works Director — 4/27/18 Date

ROLLED CURB AND GUTTER
STANDARD DETAIL R-9A
NOT TO SCALE



NOTES:
1. SIDEWALKS IN COMMERCIAL ZONES SHALL BE 8' WIDE
2. WHEEL CHAIR RAMPS ARE TO BE LOCATED AT ALL RETURNS ACCORDING TO WSDOT AND IS LISTED ON DETAIL R-14
3. RAMP LENGTH IS NOT REQUIRED TO EXCEED 15 FEET. WHEN APPLYING THE 15-FOOT MAX. LENGTH, THE RUNNING SLOPE OF THE CURB RAMP IS ALLOWED TO EXCEED 8.3%. USE A SINGLE CONSTANT SLOPE FROM BOTTOM OF RAMP TO TOP OF RAMP TO MATCH INTO THE SIDEWALK OVER A HORIZONTAL DISTANCE OF 15 FEET. WHEN A RAMP IS CONSTRUCTED ON A RADIUS, THE 15-FOOT MAX. LENGTH IS MEASURED ON THE INSIDE RADIUS ALONG THE BACK OF THE RAMP.

APRIL 21, 2017

APPROVED
Public Works Director — 8/11/17 Date

TYPICAL SIDEWALK PLAN WITH CROSS SECTION
STANDARD DETAIL R-12
NOT TO SCALE

CALL BEFORE YOU DIG
Call: TOLL FREE
1-800-424-5555

APPROVED
JUL 09 2019
CITY OF FERNDALE
PUBLIC WORKS DEPARTMENT

RECORD DRAWING 7/02/2019

FERNDALE, WASHINGTON
MALLOY TERRACE PUD
PHASE 1 CONSTRUCTION
ROAD AND STORM DETAILS
00671.038 7/17/19 KB

CRAIG R. PARKINSON — STATE OF WASHINGTON — 25760 — REGISTERED PROFESSIONAL ENGINEER

CASCADE ENGINEERING GROUP, P.S., INC.
119 Grand Avenue, Suite D
Bellingham, Washington 98225
(360) 306-8161

REVISIONS	DATE
CITY COMMENTS	7/25/18
CITY COMMENTS	09/05/18
RECORD INFO	07/02/19

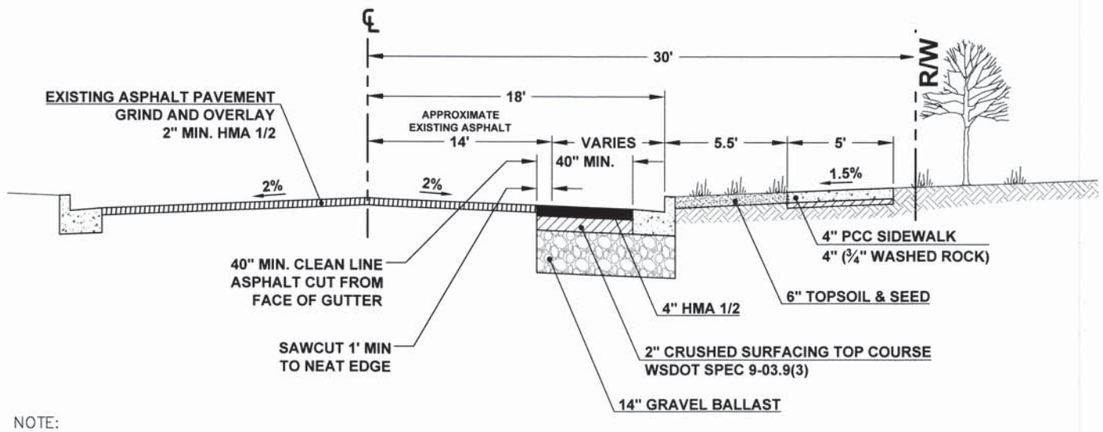
DATE: 2/9/2018
DESIGN:
DRAWN: ADJ
CHECKED:

SCALE: AS SHOWN

PROJECT NUMBER:
MDGX0001

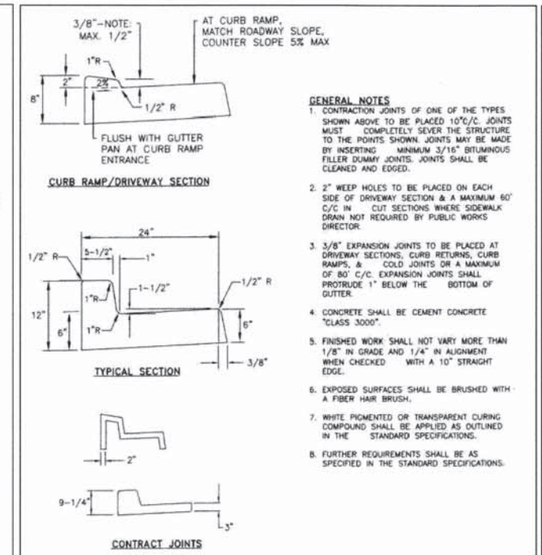
SHEET NO.
C38
OF

07/03/2019 10:51AM P:\M\MDGX0001\0400CAD\DWG\Sheets\PHASE 1 CONSTRUCTION PLANS\C36-C44 DETAILS.dwg



NOTE:
CITY STANDARD DETAIL R-1 3/4 STREET IMPROVEMENT REQUIRED. AREAS OF OBVIOUS ROAD FAILURE WILL BE IDENTIFIED AND RECONSTRUCTED TO PROPER SECTION AND COMPACTION PRIOR TO OVERLAY. ALL OTHER AREAS FULL 2" GRIND AND OVERLAY. ENGINEER TO DESIGN A CONSISTENT 2% CENTERLINE TO GUTTER LINE SLOPE MALLOY RD. TYPICAL PER CITY STANDARD. MID CROWN BREAK WILL NOT BE ACCEPTED.

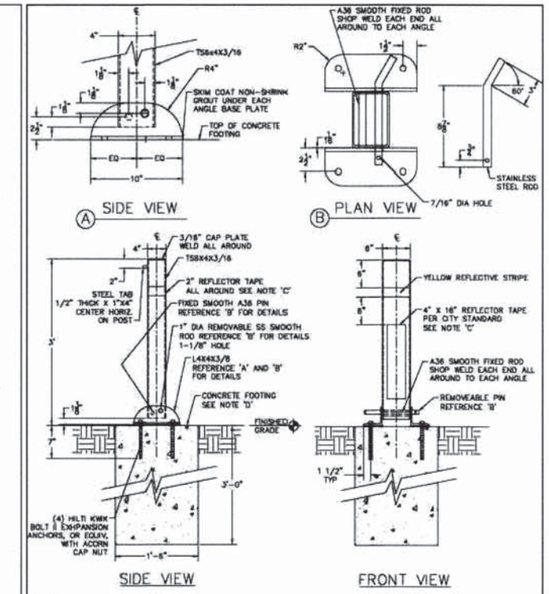
1 - MALLOY RD WIDENING TYP. SECTION



GENERAL NOTES
1. CONTRACTION JOINTS OF ONE OF THE TYPES SHOWN ABOVE TO BE PLACED 10'C/C. JOINTS MUST COMPLETELY SEVER THE STRUCTURE TO THE POINTS SHOWN. JOINTS MAY BE MADE BY INSERTING MINIMUM 3/16" BITUMINOUS FILLER DUMMY JOINTS. JOINTS SHALL BE CLEANED AND EDGED.
2. 2" WEEP HOLES TO BE PLACED ON EACH SIDE OF DRIVEWAY SECTION & A MAXIMUM 60' C/C IN CUT SECTIONS WHERE SIDEWALK DRAIN NOT REQUIRED BY PUBLIC WORKS DIRECTOR.
3. 3/8" EXPANSION JOINTS TO BE PLACED AT DRIVEWAY SECTIONS, CURB RETURNS, CURB RAMPS, & COLD JOINTS OR A MAXIMUM OF 80' C/C. EXPANSION JOINTS SHALL PROTRUDE 1" BELOW THE BOTTOM OF GUTTER.
4. CONCRETE SHALL BE CEMENT CONCRETE "CLASS 3000".
5. FINISHED WORK SHALL NOT VARY MORE THAN 1/8" IN GRADE AND 1/4" IN ALIGNMENT WHEN CHECKED WITH A 10' STRAIGHT EDGE.
6. EXPOSED SURFACES SHALL BE BRUSHED WITH A FIBER HAIR BRUSH.
7. WHITE PIGMENTED OR TRANSPARENT CURING COMPOUND SHALL BE APPLIED AS OUTLINED IN THE STANDARD SPECIFICATIONS.
8. FURTHER REQUIREMENTS SHALL BE AS SPECIFIED IN THE STANDARD SPECIFICATIONS.

NOVEMBER 25, 2016

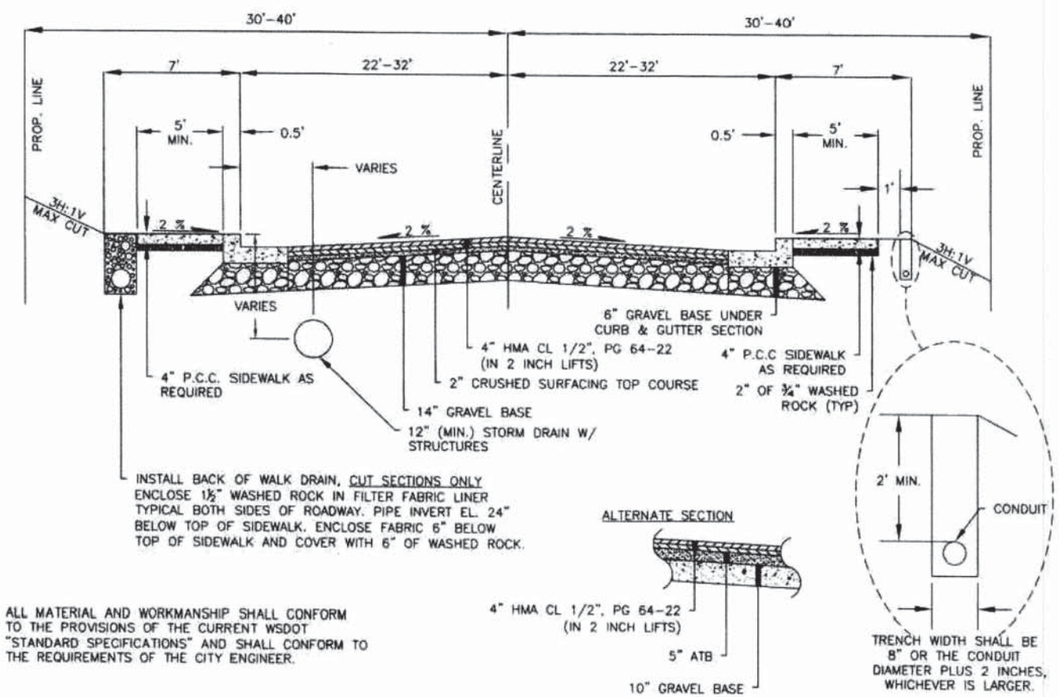
APPROVED		CURB AND GUTTER INSTALLATION
Public Works Director	8/11/17 Date	STANDARD DETAIL R-9 NOT TO SCALE



NOTES:
A. ALL STEEL SHALL BE A36 STRUCTURAL UNLESS NOTED OTHERWISE.
B. ALL STEEL SHALL BE POWDER COATED BROWN UNLESS NOTED OTHERWISE. COLOR SHALL MATCH BENJAMIN MOORE IRON CLAD LATEX BRONZE TONE COLOR #263-60 (STOCKTON'S PAINT SUPPLY), OR EQUIVALENT.
C. REFLECTIVE TAP BOTH SIDES, YELLOW BACKGROUND, NO LETTERING, TO BE MADE OF TRAFFIC GRADE REFLECTIVE TAPE.
D. FOOTING DESIGN MAY VARY PER SITE CONDITIONS.
E. ORIENTATION AND LOCATION OF BOLLARD SHALL BE APPROVED BY PARKS IN THE FIELD.

(DETAIL ORIGINATED FROM CITY OF BELLINGHAM STANDARD PLAN 02840.01)

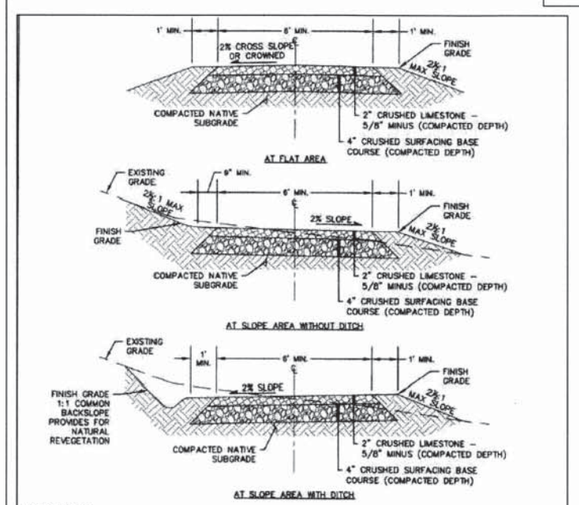
2/35 FOLD DOWN BOLLARD DETAIL
NTS



ALL MATERIAL AND WORKMANSHIP SHALL CONFORM TO THE PROVISIONS OF THE CURRENT WSDOT "STANDARD SPECIFICATIONS" AND SHALL CONFORM TO THE REQUIREMENTS OF THE CITY ENGINEER.

AUGUST 4, 2017

APPROVED		HOT MIX ASPHALT SECTION ARTERIALS AND COLLECTORS
Public Works Director	8/11/17 Date	STANDARD DETAIL R-1 NOT TO SCALE



GENERAL NOTES:
1. ALL TRAIL CONSTRUCTION SHALL INCLUDE STANDARD CLEARING LIMITS AS FOLLOWS: BRUSH AND BRANCHES ABOVE 38" ABOVE GROUND LEVEL SHALL BE REMOVED TO A HEIGHT OF 8' WITHIN 3' OF TRAIL. ALL VEGETATION BELOW 36" HEIGHT SHALL BE CUT BACK TO THE WIDTH OF THE TRAIL. FALLEN LOGS SHALL BE CUT FLUSH AT THE EDGE OF THE TRAIL.
2. FOLLOWING CLEARING WITHIN THE DESIGNED TRAIL CORRIDOR, REMOVE ALL ROOTS AND ORGANIC DEBRIS TO A DEPTH OF 6" PRIOR TO IMPORTING CRUSHED ROCK. ESTABLISH DESIGN CROSS-SLOPE IN SUBGRADE MATERIALS, SLOPE OR CROWN AS DIRECTED.
3. IN AREAS OF SIGNIFICANT TREE ROOTS, EXCAVATE ONLY 4" TO SUBGRADE AND COMPACT. PROVIDE 4" BASE COURSE AND 2" CRUSHED LIMESTONE PER SPECIFICATION. ROLL/COMPACT EDGES OF FINISH PATH TO BLEND BACK TO ADJACENT GRADE. FINISHING GRADE OF PATH WILL BE FLUSH OR SLIGHTLY ELEVATED/CROWNED ABOVE ADJACENT SURFACES.
4. IMPORT CRUSHED ROCK FOLLOWING DEPARTMENTAL APPROVAL OF PREPARED TRAIL BED. TAPER EDGES AT A 45° ANGLE INTO THE SUBGRADE. TOP COURSE FLUSH WITH FINISH GRADE. WHERE DESIRED, PROVIDE COMPLETE MECHANICAL COMPACTION. WHERE THIS IS IMPRACTICAL OR IMPOSSIBLE, COMPACT BY HAND WITH AN APPROPRIATELY WEIGHTED IMPLEMENT.
5. PERFORM SITE RESTORATION AND REVEGETATION IMMEDIATELY UPON COMPLETION OF TRAIL WORK AND/OR RELATED DRAINAGE WORK OR AS DIRECTED BY THE ENGINEER.

MAY 3, 2018

APPROVED		CRUSHED ROCK TRAIL
Public Works Director	5-7-18 Date	STANDARD DETAIL R-21 NOT TO SCALE

CALL BEFORE YOU DIG
Call: TOLL FREE
1-800-424-5555

APPROVED
JUL 09 2019
CITY OF FERNDALE
PUBLIC WORKS DEPARTMENT

RECORD DRAWING 7/02/2019

FERNDALE, WASHINGTON
MALLOY TERRACE PUD
PHASE 1 CONSTRUCTION
ROAD AND STORM DETAILS

00671.039 7/17/19 KB

CASCADE ENGINEERING GROUP, P.S., INC.
119 Grand Avenue, Suite D
Bellingham, Washington 98225
(360) 306-8161

REVISIONS	DATE
CITY COMMENTS	7/25/18
CITY COMMENTS	09/05/18
RECORD INFO	07/02/19

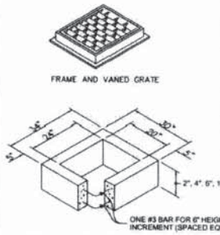
DATE: 2/9/2018
DESIGN:
DRAWN: ADJ
CHECKED:

SCALE: AS SHOWN

PROJECT NUMBER:
MDGX0001

SHEET NO.
C39
OF

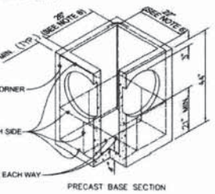
07/03/2019 10:51AM P:\M\MDGX0001\0400CAD\DWG\Sheets\PHASE 1 CONSTRUCTION PLANS\C36-C44 DETAILS.dwg

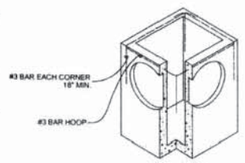


PIPE ALLOWANCES	
PIPE MATERIAL	MAXIMUM INSIDE DIAMETER
REINFORCED OR PLAIN CONCRETE	12"
ALL METAL PIPE	15"
CPSSP* (WSDOT STD. SPEC. 9-05.20)	12"
SOLID WALL PVC (WSDOT STD. SPEC. 9-05.12(1))	15"
PROFILE WALL PVC (WSDOT STD. SPEC. 9-05.12(2))	15"

* CORRUGATED POLYETHYLENE STORM SEWER PIPE

NOTES:
1. As acceptable alternatives to the rebar shown in the PRECAST BASE SECTION, fibers (placed according to the WSDOT Standard Specifications), or wire mesh having a minimum area of 0.12 square inches per foot shall be used with the minimum required rebar shown in the ALTERNATIVE PRECAST BASE SECTION. Wire mesh shall not be placed in the knockouts.
2. The knockout diameter shall not be greater than 20". Knockouts shall have a wall thickness of 2" minimum to 2.5" maximum. Provide a 1.5" minimum gap between the knockout wall and the outside of the pipe. After the pipe is installed, fill the gap with joint mortar in accordance with WSDOT Standard Specification 9-04.3.
3. The maximum depth from the finished grade to the lowest pipe invert shall be 5'.
4. The frame and grate may be installed with the flange down, or integrally cast into the adjustment section with flange up.
5. The Precast Base Section may have a rounded floor, and the walls may be sloped at a rate of 1:24 or steeper.
6. The opening shall be measured at the top of the Precast Base Section.
7. All pickup holes shall be grouted full after the basin has been placed.

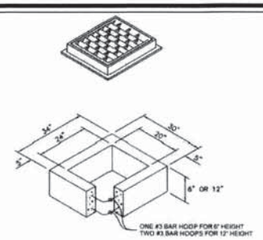




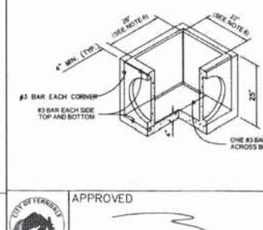
NOVEMBER 23, 2016

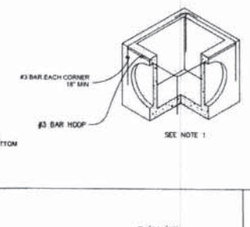
APPROVED — Public Works Director — 8/11/17 Date

CATCH BASIN TYPE 1
STANDARD DETAIL ST-1
NOT TO SCALE



NOTES:
1. As acceptable alternatives to the rebar shown in the **PRECAST BASE SECTION**, fibers (placed according to the Standard Specifications), or wire mesh having a minimum area of 0.12 square inches per foot shall be used with the minimum required rebar shown in the **ALTERNATIVE PRECAST BASE SECTION**. Wire mesh shall not be placed in the knockouts.
2. The knockout diameter shall not be greater than 18". Knockouts shall have a wall thickness of 2" minimum to 2.5" maximum. Provide a 1.5" minimum gap between the knockout wall and the outside of the pipe. After the pipe is installed, fill the gap with joint mortar in accordance with WSDOT Standard Specification 9-04.3.
3. The maximum depth from the finished grade to the lowest pipe invert shall be 5'.
4. The frame and grate may be installed with the flange up or down. The frame may be cast into the adjustment section.
5. The Precast Base Section may have a rounded floor, and the walls may be sloped at a rate of 1:24 or steeper.
6. The opening shall be measured at the top of the precast base section.
7. All pickup holes shall be grouted full after the inlet has been placed.





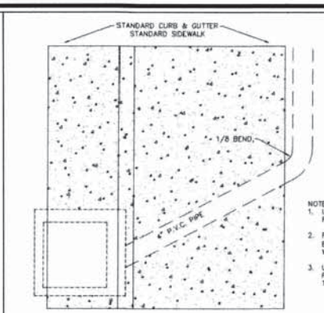
PIPE ALLOWANCES	
PIPE MATERIAL	MAXIMUM INSIDE DIAMETER
REINFORCED OR PLAIN CONCRETE	12"
ALL METAL PIPE	15"
CPSSP* (WSDOT STD. SPEC. 9-05.20)	12"
SOLID WALL PVC (WSDOT STD. SPEC. 9-05.12(1))	15"
PROFILE WALL PVC (WSDOT STD. SPEC. 9-05.12(2))	15"

* CORRUGATED POLYETHYLENE STORM SEWER PIPE

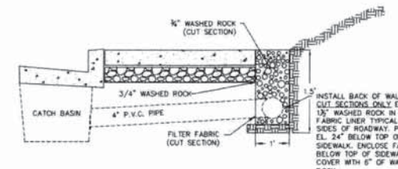
NOVEMBER 23, 2016

APPROVED — Public Works Director — 8/11/17 Date

CONCRETE INLET
STANDARD DETAIL ST-4
NOT TO SCALE



NOTES:
1. USE PERFORATED PIPE AND FILTER FABRIC IN CUT SECTIONS.
2. FILTER FABRIC TO BE INSTALLED BETWEEN THE SOIL AND THE 3/4" WASHED ROCK.
3. USE NONPERFORATED PIPE WITHOUT FILTER FABRIC WHEN CARRIED THROUGH NON-CUT AREAS.

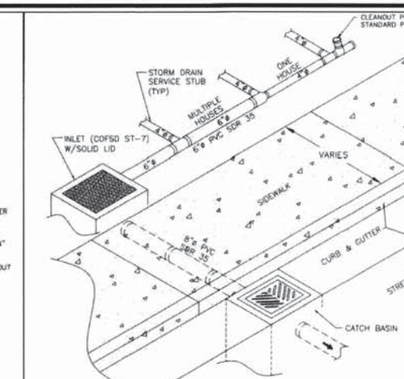


INSTALL BACK OF WALK DRAIN, CUT SECTIONS ONLY. ENCLOSE 13½" WASHED ROCK IN FILTER FABRIC LINER TYPICAL BOTH SIDES OF ROADWAY. PIPE INVERT EL. 24" BELOW TOP OF SIDEWALK. ENCLOSE FABRIC 6" BELOW TOP OF SIDEWALK AND COVER WITH 6" OF WASHED ROCK.

APRIL 21, 2017

APPROVED — Public Works Director — 8/11/17 Date

SIDEWALK DRAIN
STANDARD DETAIL ST-13
NOT TO SCALE

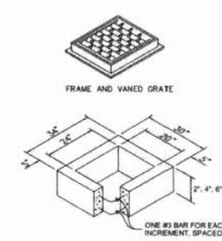


NOTES:
1. ENGINEER SHALL DESIGN ALL STORM DRAIN SERVICE STUB INVERT ELEVATIONS TO FACILITATE 2% SLOPE FROM 2' BELOW THE LOWEST POINT OF THE BUILDING ENVELOPE.
2. STORM DRAIN SERVICE STUB SHALL BE 4" WHITE PVC PIPE ASTM D 3034 SDR 35
3. TRUNK LINE FOR MULTIPLE RESIDENTIAL STORM DRAIN SERVICE STUBS SHALL BE 6" WHITE PVC PIPE CONNECTED TO COFSD ST-7 INLET.
4. EACH COFSD ST-7 INLET SHALL BE CONNECTED TO A NEARBY TYPE 1, TYPE 1L OR TYPE 2 CATCH BASIN WITH 6" WHITE PVC PIPE.
5. EACH STORM DRAIN SERVICE STUB SHALL BE CAPPED WITH WATERTIGHT PLUG. EACH STUB SHALL BE MARKED FOR LOCATION WITH A 2" DIA. WHITE PVC PIPE (MIN. SCHEDULE 40) WITH THE TOP 18" STENCILED WITH THE WORD "DRAIN" AND THE PIPE INVERT INDICATED. THE LOCATION MARKER SHALL BE CONNECTED TO THE SERVICE STUB BY A #12 COPPER WIRE.

NOVEMBER 23, 2016

APPROVED — Public Works Director — 8/11/17 Date

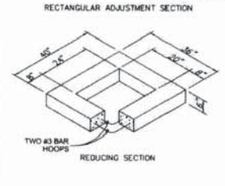
POSITIVE LOT D
STANDARD DETA
NOT TO SCA

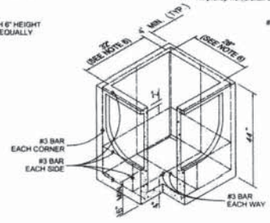


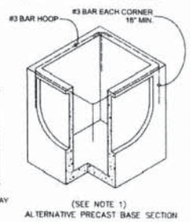
PIPE ALLOWANCES	
PIPE MATERIAL	MAXIMUM INSIDE DIAMETER
REINFORCED OR PLAIN CONCRETE	18"
ALL METAL PIPE	21"
CPSSP* (WSDOT STD. SPEC. 9-05.20)	18"
SOLID WALL PVC (WSDOT STD. SPEC. 9-05.12(1))	21"
PROFILE WALL PVC (WSDOT STD. SPEC. 9-05.12(2))	21"

* CORRUGATED POLYETHYLENE STORM SEWER PIPE

NOTES:
1. As acceptable alternatives to the rebar shown in the **PRECAST BASE SECTION**, fibers (placed according to the WSDOT Standard Specifications), or wire mesh having a minimum area of 0.12 square inches per foot, shall be used with the minimum required rebar shown in the ALTERNATIVE **PRECAST BASE SECTION**. Wire mesh shall not be placed in the knockouts.
2. The knockout shall not be greater than 26", in any direction. Knockouts shall have a wall thickness of 2" minimum to 2.5" maximum. Provide a 1.5" minimum gap between the knockout wall and the outside of the pipe. After the pipe is installed, fill the gap with joint mortar in accordance with **WSDOT Standard Specification 9-04.3**.
3. The maximum depth from the finished grade to the lowest pipe invert shall be 5'.
4. The frame and grate may be installed with the flange down or integrally cast into the adjustment section with flange up.
5. The Precast Base Section may have a rounded floor, and the walls may be sloped at a rate of 1:24 or steeper.
6. The opening shall be measured at the top of the Precast Base Section.
7. All pickup holes shall be grouted full after the basin has been placed.



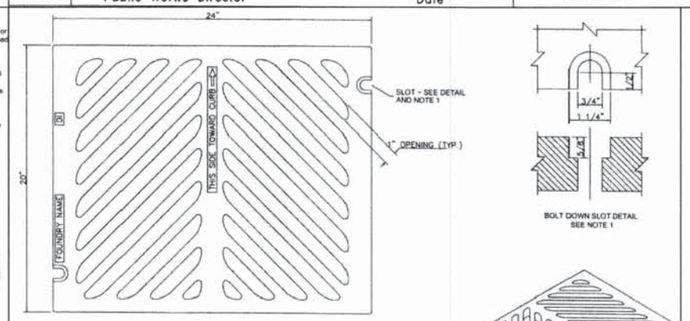




NOVEMBER 23, 2016

APPROVED — Public Works Director — 8/11/17 Date

CATCH BASIN TYPE 1L
STANDARD DETAIL ST-2
NOT TO SCALE



NOTES:
1. Bolt-down capability is required on all frames, grates, and covers, unless specified otherwise in the Contract. Provide 2 holes in the frame that are vertically aligned with the grate or cover slots. The frame shall accept the 5/8" - 11 NC x 2" Allen head cap screw by being tapped, or other approved mechanism. Location of bolt-down holes varies by manufacturer.
2. Refer to **WSDOT Standard Specification 9-05.15(2)** for additional requirements.
3. For frame details, see **WSDOT Standard Plan B-30.10**.

NOVEMBER 23, 2016

APPROVED — Public Works Director — 8/11/17 Date

RECTANGULAR HERRINGBONE GRATE
STANDARD DETAIL ST-11
NOT TO SCALE

BEDDING SPECIFICATIONS FOR PVC PIPE

THE FOLLOWING SUPPLEMENTAL SPECIFICATIONS ARE TO BE USED IN CONJUNCTION WITH THE WSDOT STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND MUNICIPAL CONSTRUCTION, CURRENT EDITION:

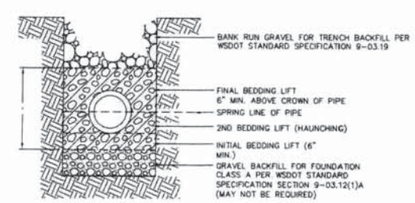
BEDDING FOR SEWERS, DRAINS AND CULVERTS FOR PVC PIPE–

BEDDING MATERIAL FOR PVC PIPE SHALL BE PEA GRAVEL CONFORMING TO THE FOLLOWING SPECIFICATIONS:

PEA GRAVEL – PEA GRAVEL BEDDING SHALL BE A CLEAN MIXTURE FREE FROM ORGANIC MATTER AND CONFORMING TO THE FOLLOWING GRADATION WHEN TESTED IN ACCORDANCE WITH ASTM D422:

U.S. STANDARD SIEVE SIZE	PERCENTAGE PASSING, BY WT.
3/4"	100
3/8"	95–100
#8	0–10
#200	0–3

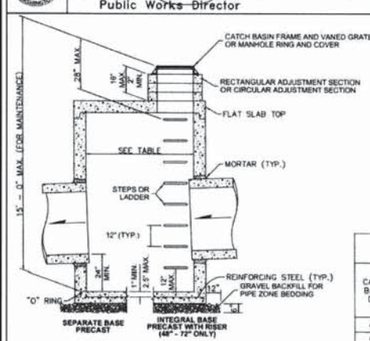
BACKFILL – WHENEVER A TRENCH IS EXCAVATED IN THE EXISTING OR PROPOSED ROADWAY, SIDEWALK OR OTHER AREAS WHERE SETTLEMENT WOULD BE DETRIMENTAL, THE ENTIRE TRENCH ABOVE THE PIPE ZONE SHALL BE BACKFILLED WITH BANK RUN GRAVEL BACKFILL TO 95% OF MAXIMUM DENSITY.



NOVEMBER 23, 2016

APPROVED — Public Works Director — 8/11/17 Date

PVC PIPE ZONE BEDDING
STANDARD DETAIL ST-15
NOT TO SCALE



NOTES:
1. No steps are required when height is 4' or less.
2. The bottom of the precast catch basin may be sloped to facilitate cleaning.
3. The rectangular frame and grate may be installed with the flange up or down. The frame may be cast into the adjustment section.
4. Knockouts shall have a wall thickness of 2" minimum to 2.5" maximum. Provide a 1.5" minimum gap between the knockout wall and the outside of the pipe. After the pipe is installed, fill the gap with joint mortar in accordance with **WSDOT Standard Specification 9-04.3.**

CATCH BASIN DIAMETER	PIPE ALLOWANCES — PIPE MATERIAL WITH MAXIMUM INSIDE DIAMETER				
	CONCRETE	ALL METAL	CPSSP ①	SOLID WALL PVC ②	PROFILE WALL PVC ③
48"	24"	30"	24"	30"	30"
54"	30"	36"	30"	36"	36"
60"	36"	42"	36"	42"	42"
72"	42"	54"	42"	48"	48"
84"	54"	60"	54"	48"	48"
96"	60"	72"	60"	48"	48"
120"	66"	84"	60"	48"	48"
144"	78"	96"	60"	48"	48"

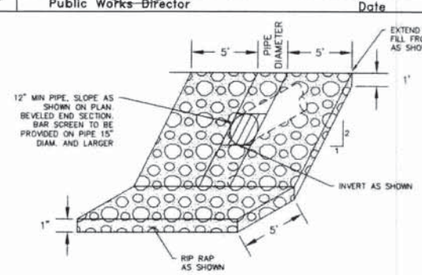
① Corrugated Polyethylene Storm Sewer Pipe (**WSDOT Standard Specification 9-05.20**)
② (WSDOT Standard Specification 9-05.12(1))
③ (WSDOT Standard Specification 9-05.12(2))

CATCH BASIN DIMENSIONS						
CATCH BASIN DIA.	WALL THK	BASE THK	MAXIMUM KNOCKOUT SIZE	MINIMUM DISTANCE BETWEEN KNOCKOUTS	BASE REINFORCING STEEL in^2/ft. IN EACH DIRECTION	
					SEPARATE BASE	INTEGRAL BASE
48"	4"	6"	36"	8"	0.23	0.15
54"	4.5"	8"	42"	8"	0.19	0.19
60"	5"	8"	48"	8"	0.25	0.25
72"	6"	8"	60"	12"	0.35	0.24
84"	8"	12"	72"	12"	0.39	0.29
96"	8"	12"	84"	12"	0.39	0.29
120"	10"	12"	96"	12"		
144"	12"	12"	108"	12"		

NOVEMBER 23, 2016

APPROVED — Public Works Director — 8/11/17 Date

CATCH BASIN TYPE 2
STANDARD DETAIL ST-3
NOT TO SCALE



NOTE:
1. THE CITY ENGINEER MAY REQUIRE THAT THE ENGINEER OF RECORD SIZE AND LOCATE SPALLS APPROPRIATELY FOR SITE SPECIFIC CONVEYANCE AND SLOPE PERCENT.

AUGUST 4, 2017

APPROVED — Public Works Director — 8/11/17 Date

CULVERT INLET OUTLET DETAIL
STANDARD DETAIL ST-14
NOT TO SCALE

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RECORD DRAWING 7/02/2019

FERNDALE, WASHINGTON
MALLOY TERRACE PUD
PHASE 1 CONSTRUCTION
STORM DETAILS
00671.040 7/17/19 KB

CASCADE ENGINEERING GROUP, P.S., INC.
119 Grand Avenue, Suite D
Bellingham, Washington 98225
(360) 306-8161

REVISIONS	DATE
CITY COMMENTS	7/25/18
CITY COMMENTS	09/05/18
RECORD INFO	07/02/19

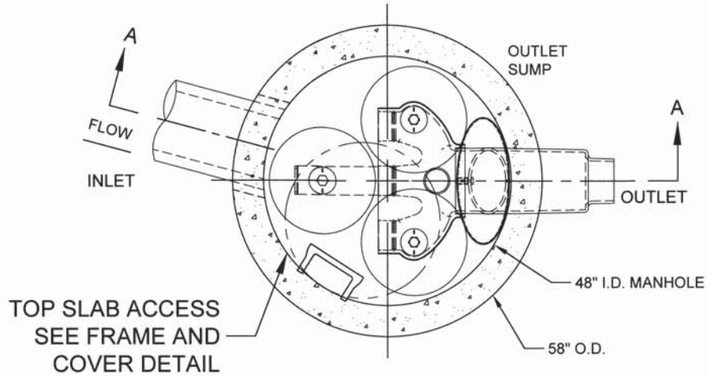
DATE: 2/9/2018
DESIGN:
DRAWN: ADJ
CHECKED:

SCALE: AS SHOWN

PROJECT NUMBER:
MDGX0001

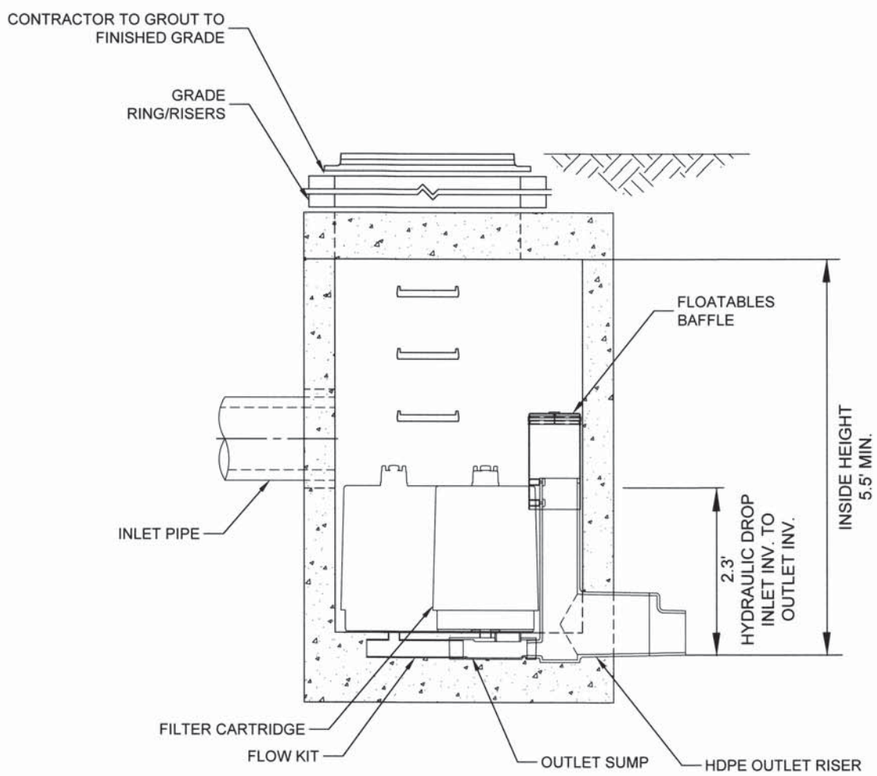
SHEET NO.
C40
OF

07/03/2019 10:52AM P:\M\MDGX0001\0400CAD\DWG\Sheets\PHASE 1 CONSTRUCTION PLANS\C36-C44 DETAILS.dwg



PLAN VIEW

STANDARD OUTLET RISER
FLOWKIT: 40A



SECTION A-A

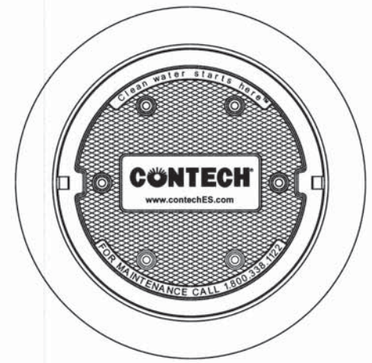
STORMFILTER DESIGN NOTES

STORMFILTER TREATMENTCAPACITY IS A FUNCTION OF THE CARTRIDGE SELECTION AND THE NUMBER OF CARTRIDGES. THE STANDARD MANHOLE STYLE IS SHOWN WITH THE MAXIMUM NUMBER OF CARTRIDGES (3). VOLUME SYSTEM IS ALSO AVAILABLE WITH MAXIMUM 3 CARTRIDGES. Ø48" MANHOLE STORMFILTER PEAK HYDRAULIC CAPACITY IS 1.0 CFS. IF THE SITE CONDITIONS EXCEED 1.0 CFS AN UPSTREAM BYPASS STRUCTURE IS REQUIRED.

CARTRIDGE SELECTION

CARTRIDGE HEIGHT	27"			18"			LOW DROP		
RECOMMENDED HYDRAULIC DROP (H)	3.05'			2.3'			1.8'		
SPECIFIC FLOW RATE (gpm/sf)	2 gpm/sf	1.67* gpm/sf	1 gpm/sf	2 gpm/sf	1.67* gpm/sf	1 gpm/sf	2 gpm/sf	1.67* gpm/sf	1 gpm/sf
CARTRIDGE FLOW RATE (gpm)	22.5	18.79	11.25	15	12.53	7.5	10	8.35	5

* 1.67 gpm/sf SPECIFIC FLOW RATE IS APPROVED WITH PHOSPHOSORB® (PSORB) MEDIA ONLY



FRAME AND COVER

(DIAMETER VARIES)
N.T.S.

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID	SDCB 16
WATER QUALITY FLOW RATE (cfs)	0.05
PEAK FLOW RATE (cfs)	0.45
RETURN PERIOD OF PEAK FLOW (yrs)	100
CARTRIDGE HEIGHT (27", 18", LOW DROP(LD))	18
NUMBER OF CARTRIDGES REQUIRED	3
CARTRIDGE FLOW RATE	7.5
MEDIA TYPE (PERLITE, ZPG, PSORB)	ZPG

PIPE DATA:	I.E.	MATERIAL	DIAMETER
INLET PIPE #1	111.40	PE	12"
INLET PIPE #2	-	-	-
OUTLET PIPE	108.95	PE	12"

RIM ELEVATION	116.06 MIN

ANTI-FLOTATION BALLAST	WIDTH	HEIGHT
	-	-

NOTES/SPECIAL REQUIREMENTS:

GENERAL NOTES

1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. DIMENSIONS MARKED WITH ( ) ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.
3. FOR SITE SPECIFIC DRAWINGS WITH DETAILED VAULT DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
4. STORMFILTER WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
5. STRUCTURE SHALL MEET AASHTO HS-20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 5' AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO.
6. FILTER CARTRIDGES SHALL BE MEDIA-FILLED, PASSIVE, SIPHON ACTUATED, RADIAL FLOW, AND SELF CLEANING. RADIAL MEDIA DEPTH SHALL BE 7-INCHES. FILTER MEDIA CONTACT TIME SHALL BE AT LEAST 38 SECONDS.
7. SPECIFIC FLOW RATE IS EQUAL TO THE FILTER TREATMENT CAPACITY (gpm) DIVIDED BY THE FILTER CONTACT SURFACE AREA (sq ft).
8. STORMFILTER STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-478 AND AASHTO LOAD FACTOR DESIGN METHOD.

INSTALLATION NOTES

A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STORMFILTER STRUCTURE (LIFTING CLUTCHES PROVIDED).
C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT INLET PIPE(S).
E. CONTRACTOR TO PROVIDE AND INSTALL CONNECTOR TO THE OUTLET RISER STUB. STORMFILTER EQUIPPED WITH A DUAL DIAMETER HDPE OUTLET STUB AND SAND COLLAR. IF OUTLET PIPE IS LARGER THAN 8 INCHES, CONTRACTOR TO REMOVE THE 8 INCH OUTLET STUB AT MOLDED IN CUT LINE. COUPLING BY FERNCO OR EQUAL AND PROVIDED BY CONTRACTOR.
F. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT CARTRIDGES FROM CONSTRUCTION-RELATED EROSION RUNOFF.

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JUL 09 2019
BY CITY OF FERNDALE
PUBLIC WORKS DEPARTMENT

RECORD DRAWING 7/02/2019

FERNDALE, WASHINGTON
MALLOY TERRACE PUD
PHASE 1 CONSTRUCTION
STORMFILTER DETAILS

00671.041 7/17/19 KB

CASCADE ENGINEERING GROUP, P.S., INC.
119 Grand Avenue, Suite D
Bellingham, Washington 98225
(360) 306-8161

REVISIONS	DATE
CITY COMMENTS	7/25/18
CITY COMMENTS	09/05/18
RECORD INFO	07/02/19

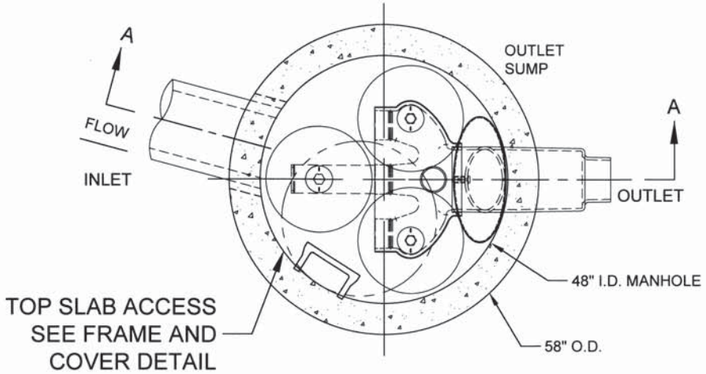
DATE: 2/9/2018
DESIGN:
DRAWN: ADJ
CHECKED:

SCALE: AS SHOWN

PROJECT NUMBER:
MDGX0001

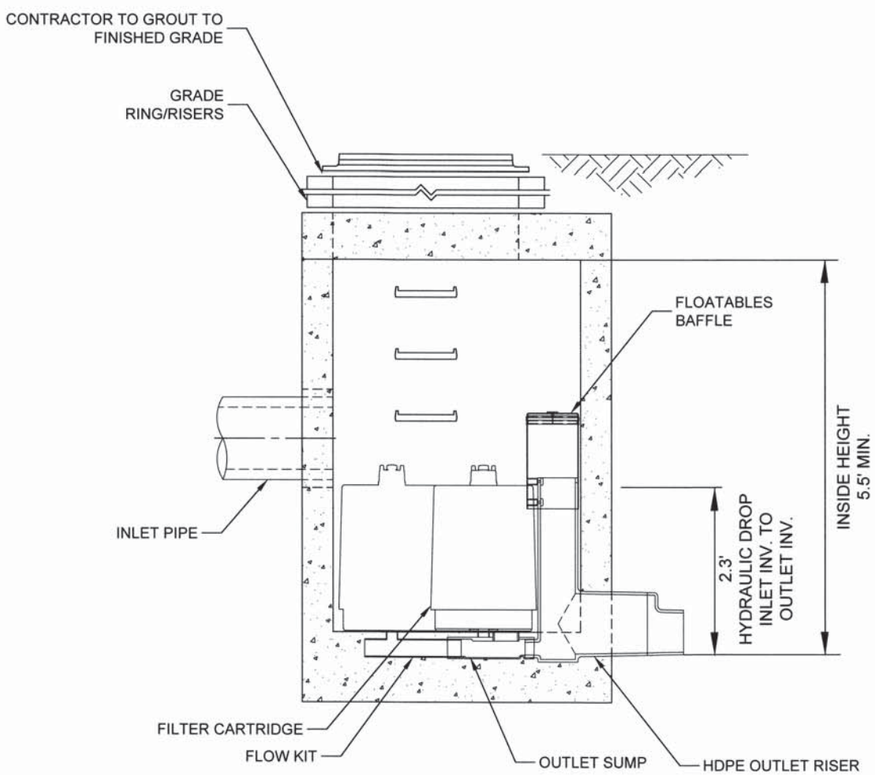
SHEET NO.
C41
OF

07/03/2019 10:52AM P:\M\MDGX0001\0400CAD\DWG\Sheets\PHASE 1 CONSTRUCTION PLANS\C36-C44 DETAILS.dwg



PLAN VIEW

STANDARD OUTLET RISER
FLOWKIT: 40A



SECTION A-A

STORMFILTER DESIGN NOTES

STORMFILTER TREATMENTCAPACITY IS A FUNCTION OF THE CARTRIDGE SELECTION AND THE NUMBER OF CARTRIDGES. THE STANDARD MANHOLE STYLE IS SHOWN WITH THE MAXIMUM NUMBER OF CARTRIDGES (3). VOLUME SYSTEM IS ALSO AVAILABLE WITH MAXIMUM 3 CARTRIDGES. Ø48" MANHOLE STORMFILTER PEAK HYDRAULIC CAPACITY IS 1.0 CFS. IF THE SITE CONDITIONS EXCEED 1.0 CFS AN UPSTREAM BYPASS STRUCTURE IS REQUIRED.

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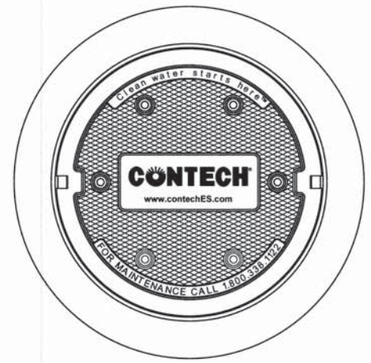
CARTRIDGE FLOW RATE (gpm)	22.5	18.79	11.25	15	12.53	7.5	10	8.35	5

* 1.67 gpm/sf SPECIFIC FLOW RATE IS APPROVED WITH PHOSPHOSORB® (PSORB) MEDIA ONLY



FRAME AND COVER

(DIAMETER VARIES)
N.T.S.

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID	SDCB 25.1
WATER QUALITY FLOW RATE (cfs)	0.016
PEAK FLOW RATE (cfs)	0.16
RETURN PERIOD OF PEAK FLOW (yrs)	100
CARTRIDGE HEIGHT (27", 18", LOW DROP(LD))	18
NUMBER OF CARTRIDGES REQUIRED	1
CARTRIDGE FLOW RATE	7.5
MEDIA TYPE (PERLITE, ZPG, PSORB)	ZPG

PIPE DATA:	I.E.	MATERIAL	DIAMETER
INLET PIPE #1	102.54	ADS-HP	12"
INLET PIPE #2	-	-	-
OUTLET PIPE	100.24	ADS-HP	12"

RIM ELEVATION	108.0 MIN

ANTI-FLOTATION BALLAST	WIDTH	HEIGHT
	-	-

NOTES/SPECIAL REQUIREMENTS:

GENERAL NOTES

1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. DIMENSIONS MARKED WITH ( ) ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.
3. FOR SITE SPECIFIC DRAWINGS WITH DETAILED VAULT DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
4. STORMFILTER WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
5. STRUCTURE SHALL MEET AASHTO HS-20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 5' AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO.
6. FILTER CARTRIDGES SHALL BE MEDIA-FILLED, PASSIVE, SIPHON ACTUATED, RADIAL FLOW, AND SELF CLEANING. RADIAL MEDIA DEPTH SHALL BE 7-INCHES. FILTER MEDIA CONTACT TIME SHALL BE AT LEAST 38 SECONDS.
7. SPECIFIC FLOW RATE IS EQUAL TO THE FILTER TREATMENT CAPACITY (gpm) DIVIDED BY THE FILTER CONTACT SURFACE AREA (sq ft).
8. STORMFILTER STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-478 AND AASHTO LOAD FACTOR DESIGN METHOD.

INSTALLATION NOTES

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E. CONTRACTOR TO PROVIDE AND INSTALL CONNECTOR TO THE OUTLET RISER STUB. STORMFILTER EQUIPPED WITH A DUAL DIAMETER HDPE OUTLET STUB AND SAND COLLAR. IF OUTLET PIPE IS LARGER THAN 8 INCHES, CONTRACTOR TO REMOVE THE 8 INCH OUTLET STUB AT MOLDED IN CUT LINE. COUPLING BY FERNCO OR EQUAL AND PROVIDED BY CONTRACTOR.
F. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT CARTRIDGES FROM CONSTRUCTION-RELATED EROSION RUNOFF.

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RECORD DRAWING 7/02/2019

FERNDALE, WASHINGTON
MALLOY TERRACE PUD
PHASE 1 CONSTRUCTION
STORMFILTER DETAILS

00671.042 7/17/19 KB

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119 Grand Avenue, Suite D
Bellingham, Washington 98225
(360) 306-8161

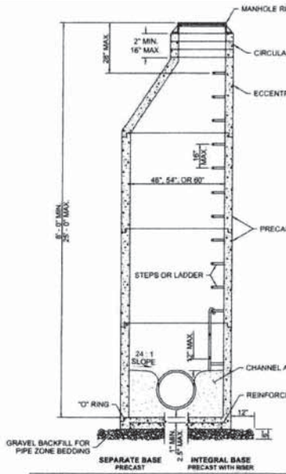
REVISIONS	DATE
CITY COMMENTS	7/25/18
ADD SFMH 25.1	7/25/18
CITY COMMENT	09/05/18
RECORD INFO	07/02/19

DATE: 2/9/2018
DESIGN:
DRAWN: ADJ
CHECKED:

SCALE: AS SHOWN

PROJECT NUMBER:
MDGX0001

SHEET NO.
C42
OF

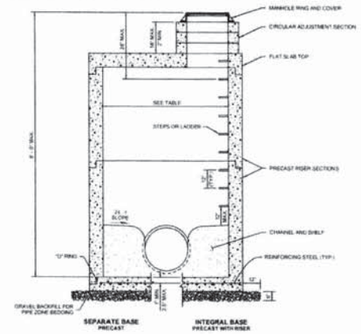


MANHOLE DIMENSION TABLE						
DIAM.	MIN. WALL THICKNESS	MIN. BASE THICKNESS	MAXIMUM KNOCKOUT SIZE	MINIMUM DISTANCE BETWEEN KNOCKOUTS	BASE REINFORCING STEEL SQ IN/FT EACH DIRECTION	
					INTEGRAL BASE	SEPARATE BASE
48"	4"	6"	36"	8"	0.16	0.23
54"	4.5"	8"	42"	8"	0.19	0.19
60"	5"	8"	48"	8"	0.25	0.25

AUGUST 1, 2017

APPROVED — Public Works Director — 8/11/17 Date

SANITARY SEWER MANHOLE TYPE 1
STANDARD DETAIL SS-3
NOT TO SCALE



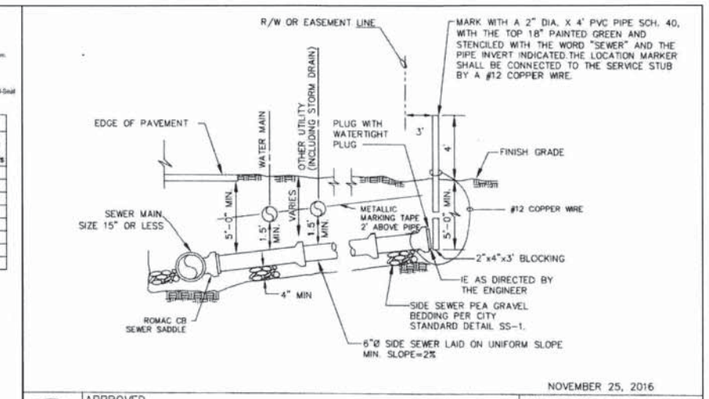
NOTES:
1. Knockouts shall have a wall thickness of 2" minimum to 2.5" maximum.
2. For pipe allowances, see **WSDOT Standard Plan B-10.20.**
3. No steps are required when height is 4' or less.
4. Manhole wall pipe penetrations shall be cored and sealed with Kor-N-Seal connector or approved equal.

MANHOLE DIMENSION TABLE				
DIAM.	MIN. WALL THICKNESS	MIN. BASE THICKNESS	MAXIMUM KNOCKOUT SIZE	MINIMUM DISTANCE BETWEEN KNOCKOUTS
48"	4"	6"	36"	8"
54"	4.5"	8"	42"	8"
60"	5"	8"	48"	8"
72"	6"	8"	60"	12"
84"	8"	12"	72"	12"
96"	8"	12"	84"	12"
120"	10"	12"	42"	12"
144"	12"	12"	108"	12"

AUGUST 4, 2017

APPROVED — Public Works Director — 8/11/17 Date

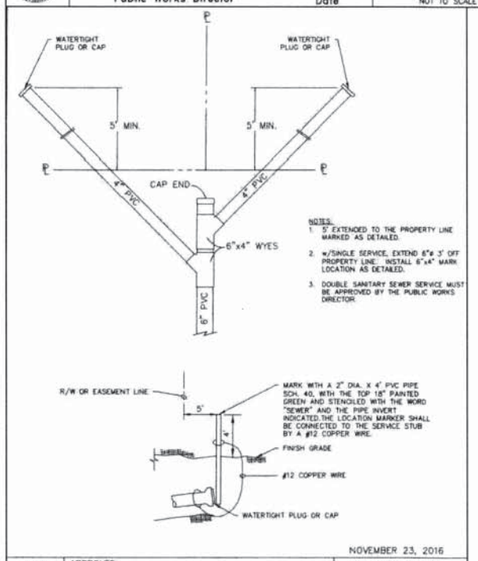
SANITARY SEWER MANHOLE TYPE 3
STANDARD DETAIL SS-4
NOT TO SCALE



NOVEMBER 25, 2016

APPROVED — Public Works Director — 8/11/17 Date

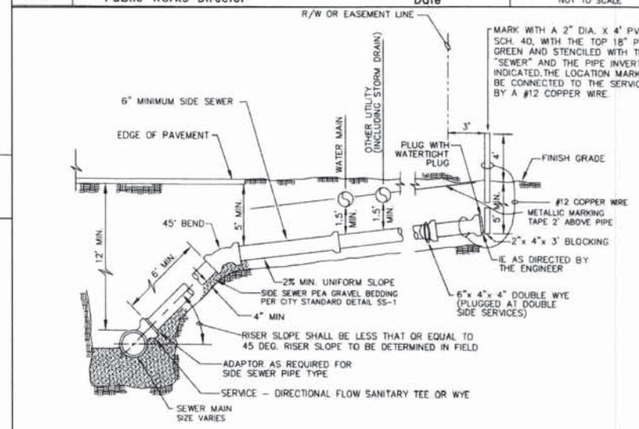
SANITARY SEWER SERVICE CONNECTION 15" OR LESS
STANDARD DETAIL SS-6
NOT TO SCALE



NOVEMBER 23, 2016

APPROVED — Public Works Director — 8/11/17 Date

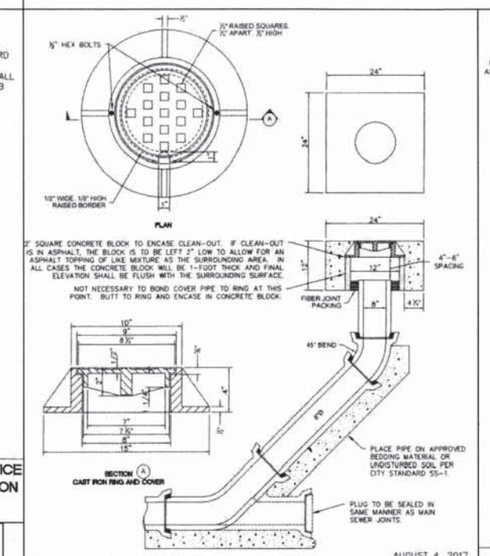
DOUBLE SANITARY SEWER SERVICE
STANDARD DETAIL SS-15
NOT TO SCALE



APRIL 18, 2017

APPROVED — Public Works Director — 8/11/17 Date

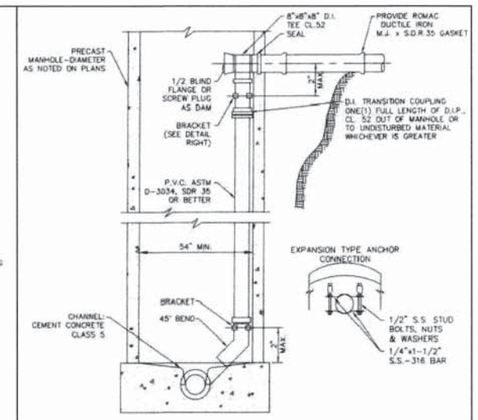
SANITARY SEWER SERVICE DEEP MAIN CONNECTION
STANDARD DETAIL SS-8
NOT TO SCALE



AUGUST 4, 2017

APPROVED — Public Works Director — 8/11/17 Date

SANITARY SEWER 8' CLEAN OUT
STANDARD DETAIL SS-5
NOT TO SCALE



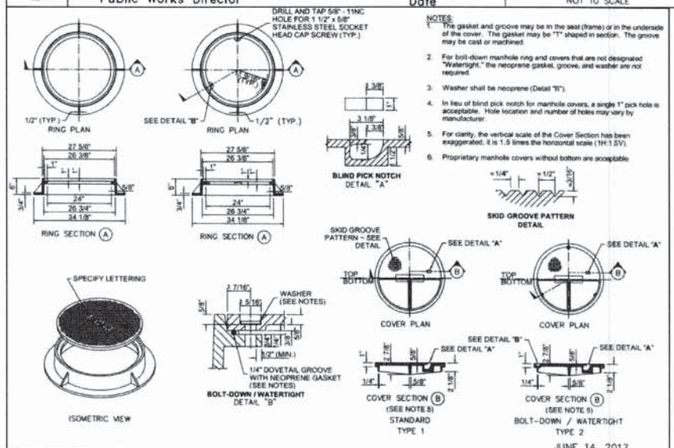
INSIDE DROP STRUCTURE

NOTE:
1. BRACKETS SHALL BE PLACED A MAXIMUM OF 10' APART. VERTICAL SECTION SHALL BE 8" DIA MIN. FOR MAINLINES & 6" DIA. FOR SIDE SEWERS.
2. INVERT TO BE CHANNELED AS DIRECTED BY THE CITY ENGINEER.
3. SANITARY SEWER INSIDE DROP DETAIL FOR NEW SANITARY MANHOLE STRUCTURES OR WHERE OVER EXCAVATION IS REQUIRED.

AUGUST 1, 2017

APPROVED — Public Works Director — 8/11/17 Date

SANITARY SEWER INSIDE DROP DETAIL
STANDARD DETAIL SS-1
NOT TO SCALE



NOTES:
1. The gasket and groove may be in the seat (frame) or in the underside of the cover. The gasket may be "T" shaped in section. The groove may be cast or machined.
2. For bolt-down manhole ring and covers that are not designated "Watertight," the neoprene gasket, groove, and washer are not required.
3. Washer shall be neoprene (Detail "B").
4. In lieu of blind pick notch for manhole covers, a single 1" pick hole is acceptable. Hole location and number of holes may vary by manufacturer.
5. For clarity, the vertical scale of the Cover Section has been exaggerated. It is 1.5 times the horizontal scale (1H:1.5V).
6. Proprietary manhole covers without bottom are acceptable.

JUNE 14, 2017

APPROVED — Public Works Director — 8/11/17 Date

CIRCULAR FRAME AND COVER
STANDARD DETAIL SS-10
NOT TO SCALE

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JUL 09 2019
CITY OF FERNDALE
PUBLIC WORKS DEPARTMENT

RECORD DRAWING 7/02/2019

FERNDALE, WASHINGTON
MALLOY TERRACE PUD
PHASE 1 CONSTRUCTION
SEWER DETAILS
00671.043 7/17/19 KB

CASCADE ENGINEERING GROUP, P.S., INC.
119 Grand Avenue, Suite D
Bellingham, Washington 98225
(360) 306-8161

REVISIONS	DATE
CITY COMMENTS	7/25/18
CITY COMMENTS	09/05/18
RECORD INFO	07/02/19

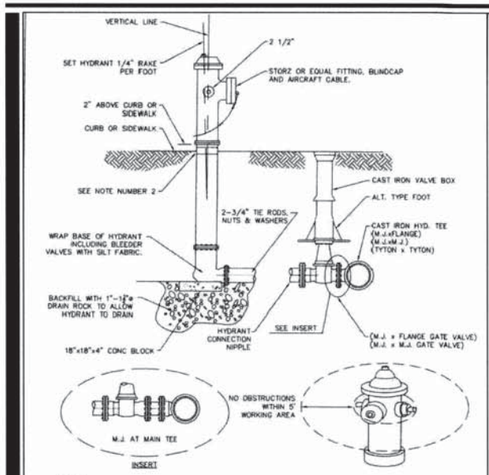
DATE: 2/9/2018
DESIGN:
DRAWN: ADJ
CHECKED:

SCALE: AS SHOWN

PROJECT NUMBER:
MDGX0001

SHEET NO.
C43
OF

07/03/2019 10:54AM P:\M\MDGX0001\0400CAD\DWG\Sheets\PHASE 1 CONSTRUCTION PLANS\C36-C44 DETAILS.dwg

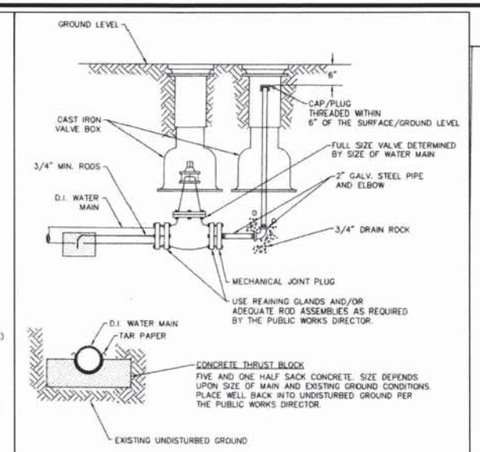


NOTES:
1. FOR CLOSE COUPLED HYDRANTS USE ALL FLANGE TYPE CONNECTIONS.
2. IF HYDRANT RISES THROUGH CONCRETE USE EXPANSION STRIP AROUND HYDRANT BARREL.
3. ALL HYDRANT ASSEMBLIES WILL BE M&H MODEL 929T.

AUGUST 2, 2017

APPROVED — Public Works Director — 8/11/17 Date

FIRE HYDRANT ASSEMBLY
STANDARD DETAIL W-1
NOT TO SCALE

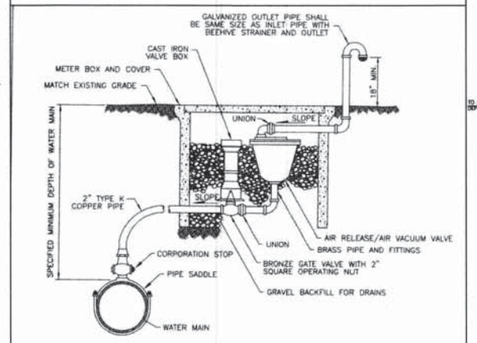


2" BLOW-OFF TO BE USED WHERE THE MAIN WILL BE EXTENDED IN THE FUTURE. FOR MAINS WITH NO FURTHER EXTENSION, REFER TO 2" BLOW-OFF, NON-EXTENDABLE MAIN.

AUGUST 1, 2017

APPROVED — Public Works Director — 8/11/17 Date

2" BLOW-OFF FUTURE WATERMAIN EXTENSION
STANDARD DETAIL W-9
NOT TO SCALE

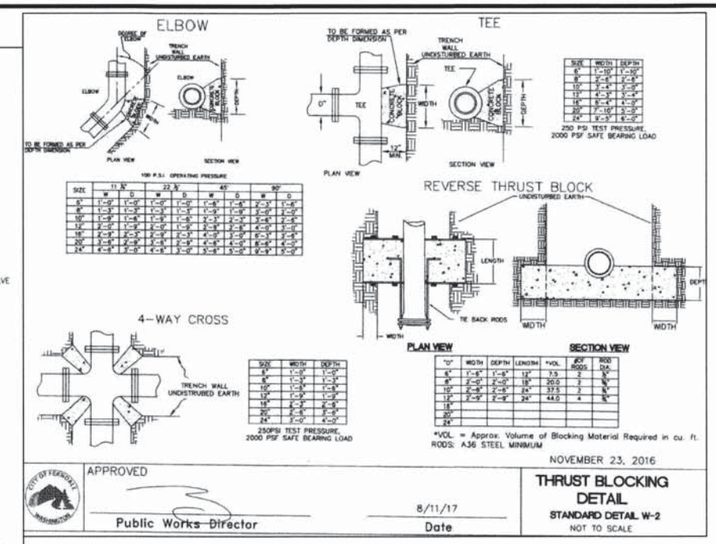


NOTES:
1. THE SIZE OF THE COMBINATION AIR RELEASE/AIR VACUUM VALVE SHALL BE SPECIFIED IN THE CONTRACT. THE PIPING AND VALVES SHALL BE THE SAME SIZE AS THE COMBINATION AIR RELEASE/AIR VACUUM VALVE.
2. LOCATE AT THE HIGH POINT OF THE MAIN, TAP TOP OF MAIN.

NOVEMBER 23, 2016

APPROVED — Public Works Director — 8/11/17 Date

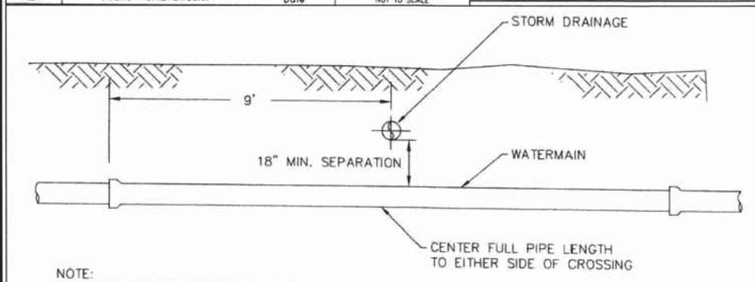
COMBINATION AIR RELEASE AIR VACUUM VALVE ASSEMBLY
STANDARD DETAIL W-13
NOT TO SCALE



NOVEMBER 23, 2016

APPROVED — Public Works Director — 8/11/17 Date

THRUST BLOCKING DETAIL
STANDARD DETAIL W-2
NOT TO SCALE

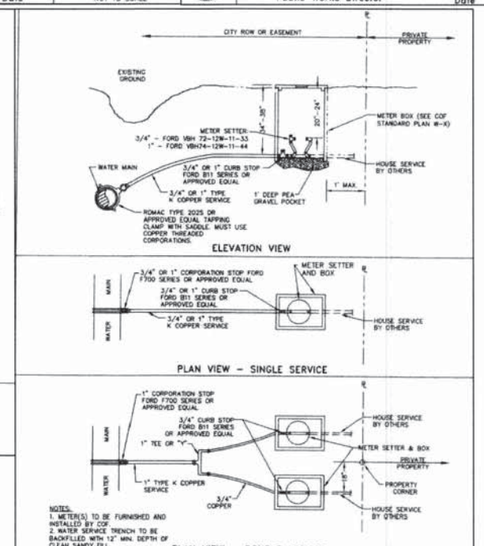


NOTE:
1. TRENCH DETAIL NOT SHOWN FOR CLARITY.

AUGUST 1, 2017

APPROVED — Public Works Director — 8/11/17 Date

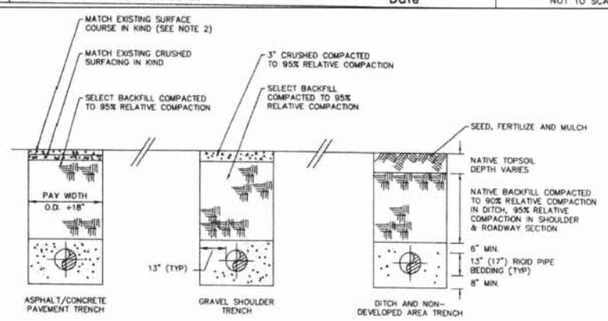
WATER CROSSING DETAIL
STANDARD DETAIL W-12
NOT TO SCALE



NOVEMBER 23, 2016

APPROVED — Public Works Director — 8/11/17 Date

TYPICAL ¾" AND 1" WATER SERVICE
STANDARD DETAIL W-5
NOT TO SCALE

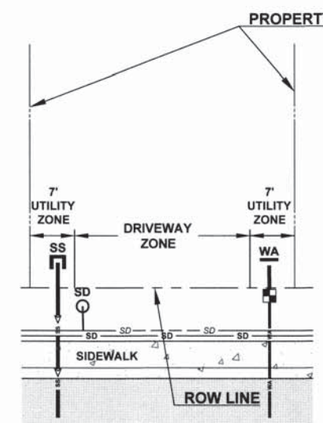


NOTES:
1. NATIVE BACKFILL SHALL BE COMPACTED TO 90% RELATIVE COMPACTION.
2. SELECT BACKFILL/CRUSHED SURFACE COURSE SHALL BE COMPACTED TO 95% COMPACTION.
3. PAVEMENT SHALL BE SAW CUT, TACKED, AND COMPACTED TO 92% OF ABSOLUTE DENSITY.
4. P.C.C. REPLACEMENT SHALL BE 2" GREATER THAN EXISTING COURSE, 7" MINIMUM, 6.5 P.C.C. (HEC - AIR ENTRAINED)
5. ALL TRENCH RESTORATION SHALL MEET CITY STANDARDS.

NOVEMBER 23, 2016

APPROVED — Public Works Director — 8/11/17 Date

WATER TRENCHING DETAIL
STANDARD DETAIL W-11
NOT TO SCALE



NOTES:

1. **WATER SERVICES TO BE LOCATED WITHIN 7-FEET OF PROPERTY LINE WHERE POSSIBLE. WATER METERS LOCATED IN THE DRIVEWAY ZONE REQUIRE A TRAFFIC RATED BOX PER CITY OF FERNDALE STANDARD DETAIL W-6.1.1**
2. **WATER METERS FOR THE FOLLOWING LOTS REQUIRE A TRAFFIC RATED BOX: LOTS 2, 3, 12, 13, 14, 15, 16, 17, 44, 45, 46, 47, 54, 55, 56, 57, 58.**

1 - TYPICAL UTILITY & DRIVEWAY ZONE LOCATIONS
N.T.S.

CALL BEFORE YOU DIG
Call: TOLL FREE
1-800-424-5555

APPROVED
JUL 09 2019
BY CITY OF FERNDALE
PUBLIC WORKS DEPARTMENT

RECORD DRAWING 7/02/2019

FERNDALE, WASHINGTON
MALLOY TERRACE PUD
PHASE 1 CONSTRUCTION
WATER DETAILS
00671.044 7/17/19 KB

CRAIG R. PARKINSON — STATE OF WASHINGTON — 25765 — REGISTERED PROFESSIONAL ENGINEER

CASCADE ENGINEERING GROUP, P.S., INC.
119 Grand Avenue, Suite D
Bellingham, Washington 98225
(360) 306-8161

REVISIONS	DATE
CITY COMMENTS	7/25/18
CITY COMMENTS	09/05/18
RECORD INFO	07/02/19

DATE: 2/9/2018
DESIGN:
DRAWN: ADJ
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PROJECT NUMBER:
MDGX0001

SHEET NO.
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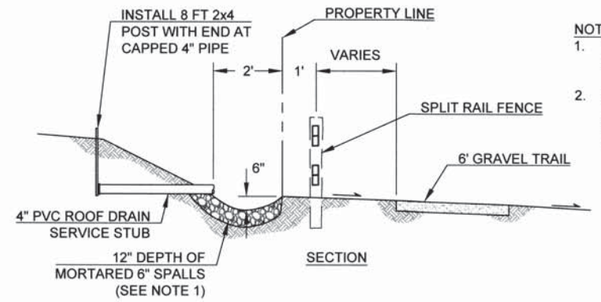
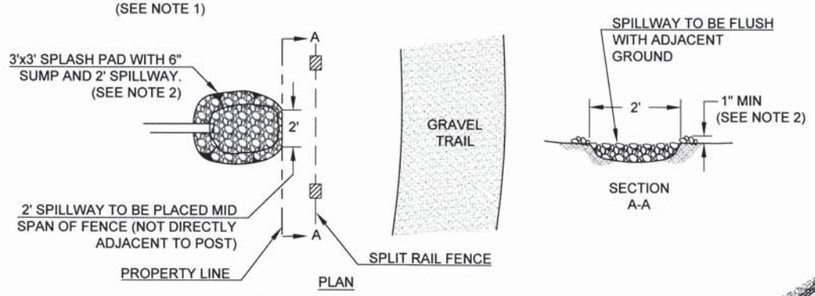
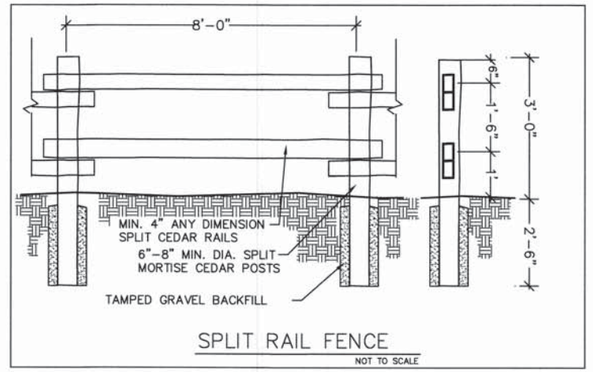
07/03/2019 10:54AM P:\MMDGX0001\0400CAD\DWG\Sheets\PHASE 1 CONSTRUCTION PLANS\C36-C44 DETAILS.dwg



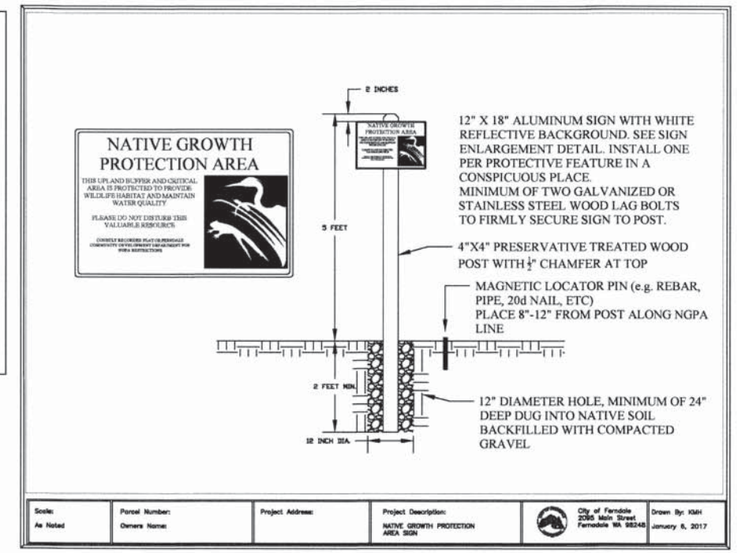
NOTES:
1. MORTAR TO BE PLACED ONLY UNDER DRY CONDITIONS.
2. ENSURE FLOW FROM SUMP FLOWS OVER 2' SPILLWAY. EDGE OF SPLASH PAD TO BE 1" MIN ABOVE SPILLWAY.

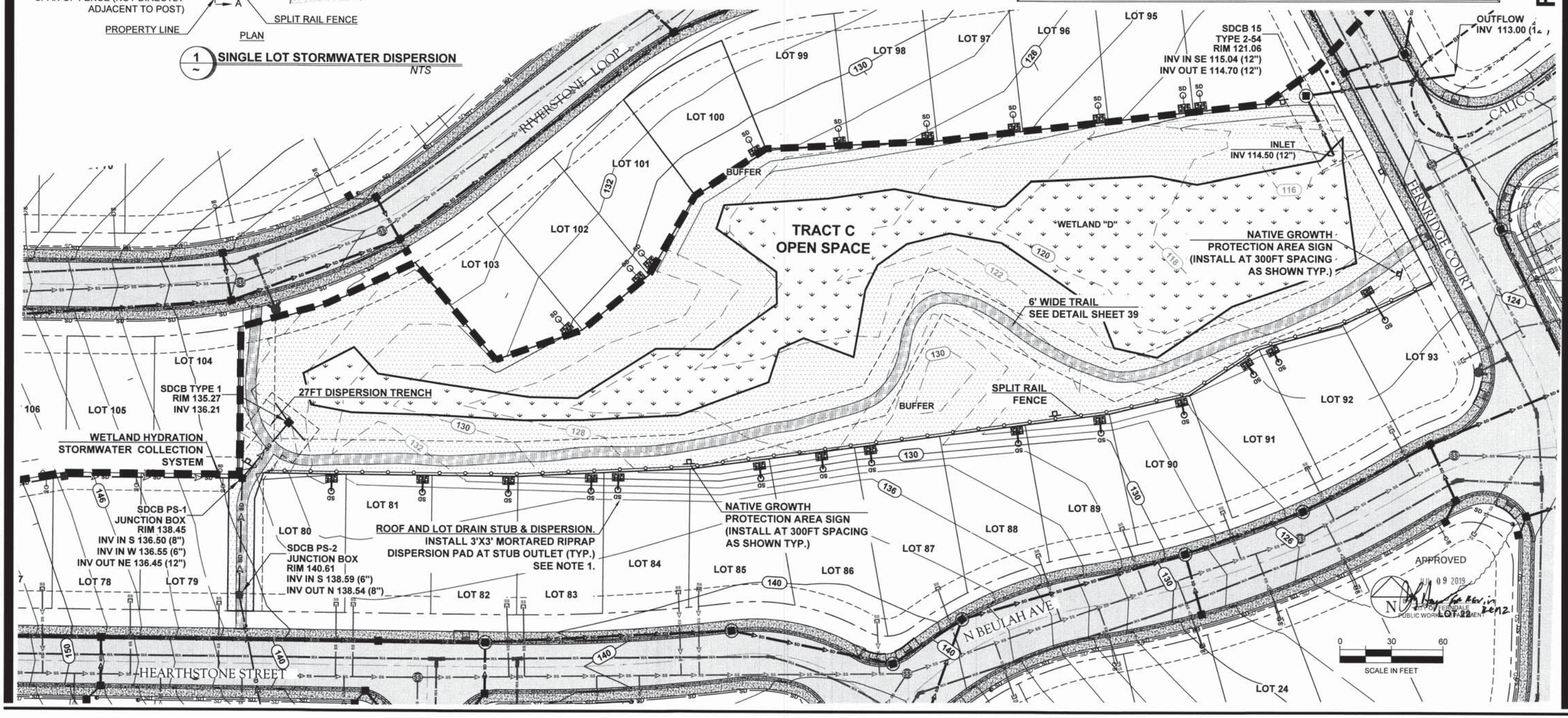


1 SINGLE LOT STORMWATER DISPERSION
NTS



NOTES:
1. **INDIVIDUAL LOT STORMWATER SYSTEMS FOR LOTS 80-103 TO BE INSTALLED AT TIME OF HOUSE CONSTRUCTION.**





RECORD DRAWING 7/02/2019

FERNDALE, WASHINGTON
MALLOY TERRACE PUD
PHASE 1 CONSTRUCTION
TRACT C IMPROVEMENTS
& STORM SERVICE LOTS 104-117
00671.045 7/17/19 KB

CHAD R. PARKINSON, STATE OF WASHINGTON, 35700, REGISTERED PROFESSIONAL ENGINEER

CASCADE ENGINEERING GROUP, P.S., INC.
119 Grand Avenue, Suite D
Bellingham, Washington 98225
(360) 306-8161

REVISIONS	DATE
CITY COMMENTS	09/10/18
CITY COMMENTS	09/14/18
RECORD INFO	07/02/19

DATE: 5/9/2018
DESIGN:
DRAWN:
CHECKED:

SCALE: AS SHOWN

PROJECT NUMBER:
MDGX0001

SHEET NO.
C45
OF

07/03/2019 11:06AM P:\M\MDGX0001\0400CAD\DWG\Sheets\PHASE 1 CONSTRUCTION PLANS\C45-Tract C Improvements.dwg