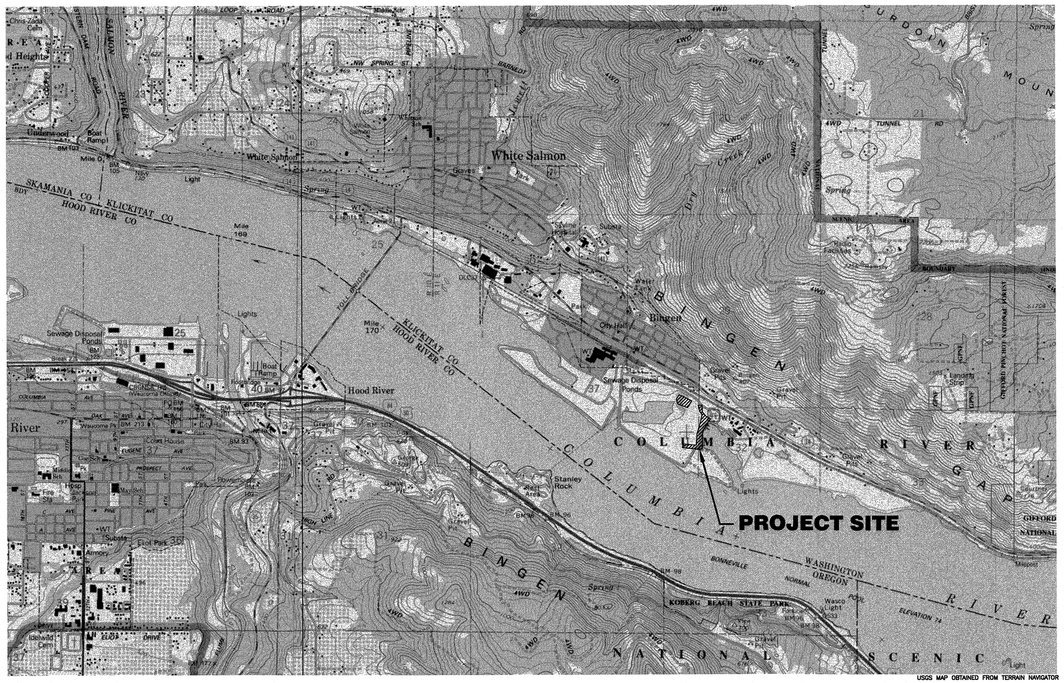
PROPOSED
WEST HARBOR UTILITIES PROJECT
FOR THE
KLICKITAT COUNTY PORT DISTRICT NO. 1
JULY 2018



USGS MAP OBTAINED FROM TERRAIN NAVIGATOR

VICINITY MAP

APPROXIMATE SCALE 1"=2,000'

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OWNER:

KLICKITAT COUNTY PORT DISTRICT NO. 1
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MARC THORNSBURY, EXECUTIVE DIRECTOR

ENGINEER:

TENNESON ENGINEERING CORP.
3775 CRATES WAY
THE DALLES, OR. 97058
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DARRIN ECKMAN, PROJECT MANAGER

SET No. _____

Design D.O.E. | Survey T.E.C.
DWG. No. K:\ACAD\14100\14122\14122_Utility.dwg
Date 7/31/2018 | Drawn T.E.C.
Work Order No. 14122 | Scale SHOWN

COVER SHEET
FOR THE
WEST HARBOR UTILITIES PROJECT
IN THE BINGEN POINT BUSINESS PARK
BINGEN, KLICKITAT COUNTY, WASHINGTON

TENNESON ENGINEERING CORP.
CONSULTING ENGINEERS
3775 CRATES WAY
THE DALLES, OREGON 97058
PH. 541-296-9177 FAX 541-296-6657
PLOT DATE: 7/31/2018 K:\ACAD\14100\14122\14122_Utility.dwg

PLOT DATE: 7/31/2018

FOR BIDDING

1" IF THIS BAR IS NOT ONE INCH, THEN ADJUST SCALES ACCORDINGLY

DARRIN O. ECKMAN STATE OF WASHINGTON 37209 REGISTERED PROFESSIONAL ENGINEER
EX. DATE: 11/14/19

COVER SHEET
C-000

Work Order No. 14122

GENERAL NOTES:

A) CONTRACTOR SHALL CONFORM TO ALL CONSTRUCTION PERMITS PROCURED BY THE OWNER.

B) CONTRACTOR TO PAY ALL TESTING COSTS. CONTRACTOR SHALL COORDINATE AND PAY ALL COSTS ASSOCIATED WITH CONNECTING TO EXISTING WATER, SANITARY SEWER AND STORM SEWER FACILITIES.

C) CONTRACTOR SHALL PROVIDE ALL BONDS AND INSURANCE REQUIRED BY PUBLIC AND/OR PRIVATE AGENCIES HAVING JURISDICTION.

D) ALL MATERIALS AND WORKMANSHIP FOR FACILITIES IN STREET RIGHT-OF-WAY OR EASEMENTS SHALL CONFORM TO APPROVING AGENCIES' CONSTRUCTION SPECIFICATIONS WHEREIN EACH HAS JURISDICTION, INCLUDING BUT NOT LIMITED TO THE COUNTY, WASHINGTON DEPARTMENT OF HEALTH (DOH) AND THE WASHINGTON DEPARTMENT OF ECOLOGY (DOE).

E) UNLESS OTHERWISE APPROVED BY THE JURISDICTION, CONSTRUCTION OF ALL PUBLIC FACILITIES SHALL BE DONE BETWEEN 7:00 AM. AND 5:00 P.M., MONDAY THROUGH FRIDAY.

F) THE CONTRACTOR SHALL PERFORM ALL WORK NECESSARY TO COMPLETE THE PROJECT IN ACCORDANCE WITH THE APPROVED CONSTRUCTION DRAWINGS INCLUDING SUCH INCIDENTALS AS MAY BE NECESSARY TO MEET APPLICABLE AGENCY REQUIREMENTS AND PROVIDE A COMPLETED PROJECT.

G) THE CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES A MINIMUM OF 48 BUSINESS HOURS (2 BUSINESS DAYS) PRIOR TO START OF CONSTRUCTION AND COMPLY WITH ALL OTHER REQUIREMENTS OF THE SERVING UTILITIES.

H) ANY INSPECTION BY THE OWNER OR OTHER AGENCIES SHALL NOT, IN ANY WAY, RELIEVE THE CONTRACTOR FROM ANY OBLIGATION TO PERFORM THE WORK IN STRICT COMPLIANCE WITH THE CONTRACT DOCUMENTS, APPLICABLE CODES AND AGENCY REQUIREMENTS.

I) CONTRACTOR SHALL ERECT AND MAINTAIN BARRICADES, WARNING SIGNS, TRAFFIC CONES PER LOCAL REQUIREMENTS IN ACCORDANCE WITH THE MUTCD (WASHINGTON AMENDMENTS). ACCESS TO DRIVEWAYS SHALL BE MAINTAINED AT ALL TIMES. ALL TRAFFIC CONTROL MEASURES SHALL BE APPROVED AND IN PLACE PRIOR TO ANY CONSTRUCTION ACTIVITY.

J) CONTRACTOR SHALL BE PROPERLY LICENSED BY THE APPROPRIATE STATE AGENCY.

K) ELEVATIONS ARE BASED ON AN ASSUMED DATUM AS SHOWN ON THE PLANS.

L) STATIONING IS BASED ON PRIMARY ALIGNMENT SHOWN.

EXISTING UTILITIES & FACILITIES:

A) THE CONTRACTOR SHALL MAINTAIN ONE COMPLETE SET OF APPROVED DRAWINGS ON THE CONSTRUCTION SITE AT ALL TIMES WHEREON HE WILL RECORD ANY APPROVED DEVIATIONS IN CONSTRUCTION FROM THE APPROVED DRAWINGS, AS WELL AS THE STATION LOCATIONS AND DEPTHS OF ALL EXISTING UTILITIES ENCOUNTERED. THESE FIELD RECORD DRAWINGS SHALL BE KEPT UP TO DATE AT ALL TIMES AND SHALL BE AVAILABLE FOR INSPECTION BY THE OWNER UPON REQUEST. FAILURE TO CONFORM TO THIS REQUIREMENT MAY RESULT IN DELAY OF PAYMENT AND/OR FINAL ACCEPTANCE OF THE PROJECT.

B) UPON COMPLETION OF CONSTRUCTION OF ALL NEW FACILITIES, CONTRACTOR SHALL SUBMIT A CLEAN SET OF FIELD RECORD DRAWINGS CONTAINING ALL RECORD DRAWINGS TO THE ENGINEER FOR USE IN THE PREPARATION OF RECORD DRAWINGS FOR SUBMITTAL TO THE OWNER. ALL INFORMATION SHOWN ON THE CONTRACTORS FIELD RECORD DRAWINGS SHALL BE SUBJECT TO VERIFICATION BY THE ENGINEER. IF SIGNIFICANT ERRORS OR DEVIATIONS ARE NOTED BY THE ENGINEER, AN AS-BUILT SURVEY PREPARED AND STAMPED BY A REGISTERED PROFESSIONAL LAND SURVEYOR AND/OR QUALIFIED ENGINEER SHALL BE COMPETED AT THE CONTRACTOR'S EXPENSE.

C) THE LOCATION AND DESCRIPTIONS OF EXISTING UTILITIES SHOWN ON THE DRAWING, ARE COMPILED FROM AVAILABLE RECORDS AND/OR FIELD SURVEYS. THE ENGINEER OR UTILITY COMPANIES DO NOT GUARANTEE THE ACCURACY OR THE COMPLETENESS OF SUCH RECORDS. CONTRACTOR SHALL FIELD VERIFY LOCATIONS AND SIZES OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION.

D) THE CONTRACTOR SHALL LOCATE AND MARK ALL EXISTING PROPERTY AND STREET MONUMENTS PRIOR TO CONSTRUCTION. ANY MONUMENTS DISTURBED DURING CONSTRUCTION OF THE PROJECT SHALL BE REPLACED BY A REGISTERED LAND SURVEYOR AT THE CONTRACTORS EXPENSE.

E) CONTRACTOR SHALL FIELD VERIFY LOCATION AND DEPTH OF ALL EXISTING UTILITIES WHERE NEW FACILITIES CROSS. CONTRACTOR SHALL BE RESPONSIBLE FOR EXPOSING POTENTIAL UTILITY CONFLICTS FAR ENOUGH AHEAD OF CONSTRUCTION TO MAKE NECESSARY GRADE MODIFICATIONS WITHOUT DELAYING THE WORK. IF GRADE MODIFICATION IS NECESSARY, CONTRACTOR SHALL NOTIFY THE DESIGN ENGINEER, AND THE DESIGN ENGINEER SHALL OBTAIN APPROVAL PRIOR TO CONSTRUCTION. ALL UTILITY CROSSINGS SHALL BE POTHOLED AS NECESSARY PRIOR TO EXCAVATING OR BORING TO ALLOW THE CONTRACTOR TO PREVENT GRADE OR ALIGNMENT CONFLICTS.

F) ALL FACILITIES SHALL BE MAINTAINED IN-PLACE BY THE CONTRACTOR UNLESS OTHERWISE SHOWN OR DIRECTED. CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO SUPPORT, MAINTAIN, OR OTHERWISE PROTECT EXISTING UTILITIES AND OTHER FACILITIES AT ALL TIMES DURING CONSTRUCTION. CONTRACTOR TO LEAVE EXISTING FACILITIES IN AN EQUAL OR BETTER-THAN-ORIGINAL CONDITION AND TO THE SATISFACTION OF THE ENGINEER.

G) UTILITIES OR INTERFERING PORTIONS OF UTILITIES THAT ARE ABANDONED IN PLACE SHALL BE REMOVED BY THE CONTRACTOR TO THE EXTENT NECESSARY TO ACCOMPLISH THE WORK. THE CONTRACTOR SHALL PLUG THE REMAINING EXPOSED ENDS OF ABANDONED UTILITIES.

H) CONTRACTOR SHALL REMOVE ALL EXISTING SIGNS, MAILBOXES, FENCES, LANDSCAPING, ETC., AS REQUIRED TO AVOID DAMAGE DURING CONSTRUCTION AND REPLACE THEM TO EXISTING OR BETTER CONDITION.

I) THE CONTRACTOR SHALL BE RESPONSIBLE FOR MANAGING CONSTRUCTION ACTIVITIES TO ENSURE THAT PUBLIC STREETS AND RIGHT-OF-WAYS ARE KEPT CLEAN OF MUD, DUST OR DEBRIS. DUST ABATEMENT SHALL BE MAINTAINED BY ADEQUATE WATERING OF THE SITE BY THE CONTRACTOR.

GRADING, PAVING & DRAINAGE:

A) UNLESS OTHERWISE NOTED, ALL GRADING, ROCKING AND PAVING TO CONFORM TO WSDOT/APAWA STANDARD SPECIFICATIONS FOR ROADS, BRIDGES AND MUNICIPAL CONSTRUCTION, CURRENT EDITION.

B) CLEAR AND GRUB WITHIN WORK LIMITS ALL SURFACE VEGETATION, TREES, STUMPS, BRUSH, ETC. DO NOT DAMAGE OR REMOVE TREES EXCEPT AS APPROVED BY THE ENGINEER SHOWN ON THE DRAWINGS. PROTECT ALL ROOTS TWO INCHES IN DIAMETER OR LARGER. (BY OWNER)

C) STRIP WORK LIMITS, REMOVING ALL ORGANIC MATTER, WHICH CANNOT BE COMPACTED INTO A STABLE MASS. ALL TREES, BRUSH AND DEBRIS ASSOCIATED WITH CLEARING, STRIPPING OR GRADING SHALL BE REMOVED AND STOCKPILED AT A LOCATION DETERMINED BY OWNER.

D) IMMEDIATELY FOLLOWING STRIPPING OPERATIONS, COMPACT SUBGRADE TO 95% OF THE MAXIMUM DRY DENSITY PER ASTM D698 TEST METHOD (STANDARD PROCTOR). SUBGRADES MUST BE INSPECTED AND APPROVED BY THE OWNER'S AUTHORIZED REPRESENTATIVE PRIOR TO PLACING EMBANKMENTS, ENGINEERED FILLS OR FINE GRADING FOR BASE ROCK.

E) ALL FILLS SHALL BE ENGINEERED EXCEPT FOR FILLS LESS THAN 18-INCHES IN DEPTH WHICH ARE LOCATED OUTSIDE THE PUBLIC RIGHT-OF-WAY, BUILDING PADS, PARKING LOTS OR OTHER AREAS TO BE IMPROVED. ENGINEERED FILLS SHALL BE CONSTRUCTED IN 6" LIFTS OVER APPROVED SUBGRADES. EACH LIFT SHALL BE COMPACTED TO 95% OF THE MAXIMUM DRY DENSITY PER ASTM D698 TEST METHOD (STANDARD PROCTOR).

F) CRUSHED ROCK SHALL CONFORM TO WSDOT STANDARD SPECIFICATION FOR ROAD, BRIDGE, AND MUNICIPAL CONSTRUCTION, CURRENT EDITION. COMPACT TO 95% OF THE MAXIMUM DRY DENSITY PER ASTM D698 TEST METHOD (STANDARD PROCTOR). WRITTEN COMPACTION TEST RESULTS FROM AN INDEPENDENT TESTING LABORATORY MUST BE RECEIVED BY THE OWNER'S AUTHORIZED REPRESENTATIVE PRIOR TO PLACING HMA PAVEMENT.

G) HMA PAVEMENT SHALL CONFORM TO WSDOT STANDARD SPECIFICATION FOR ROAD, BRIDGE, AND MUNICIPAL CONSTRUCTION, CURRENT EDITION. MIX TO BE COMMERCIAL, DENSE GRADED MIX(½"), GRADE PG. 64-28. PAVEMENT SHALL BE COMPACTED TO MINIMUM OF 91% OF MAXIMUM DENSITY.

H) UNLESS OTHERWISE SHOWN ON THE DRAWINGS, STRAIGHT GRADES SHALL BE RUN BETWEEN ALL FINISH GRADE ELEVATIONS AND/OR FINISH CONTOUR LINES SHOWN.

I) FINISH PAVEMENT GRADES AT TRANSITION IN EXISTING PAVEMENT SHALL MATCH EXISTING PAVEMENT GRADES OR BE FEATHERED PAST JOINTS WITH EXISTING PAVEMENT AS REQUIRED TO PROVIDE A SMOOTH, FREE DRAINING SURFACE.

J) ALL EXISTING OR CONSTRUCTED MANHOLES, CLEANOUTS, MONUMENTS, GAS VALVES, WATER VALVES AND SIMILAR STRUCTURES SHALL BE ADJUSTED TO MATCH FINISH GRADES OF THE PAVEMENT, SIDEWALK, LANDSCAPED AREA OR MEDIAN STRIP WHEREIN THEY LIE. VERIFY THAT ALL VALVE BOXES AND RISERS ARE CLEAN AND CENTERED OVER THE OPERATION NUT. ADJUSTMENT AFTER PLACEMENT OF FINAL WEARING COURSE WILL NOT BE ALLOWED.

K) UNLESS OTHERWISE SHOWN ON THE DRAWINGS, NO CUT OR FILL SLOPES SHALL BE CONSTRUCTED STEEPER THAN 2H:1V.

L) OWNER SHALL SEED AND MULCH ALL EXPOSED SLOPES AND DISTURBED AREA, WHICH ARE NOT SCHEDULED TO BE LANDSCAPED.

M) TRENCH EXCAVATION, BEDDING AND BACKFILL SHALL BE IN ACCORDANCE WITH THE WSDOT STANDARD SPECIFICATION FOR ROAD, BRIDGE, AND MUNICIPAL CONSTRUCTION, CURRENT EDITION.

TESTING AND INSPECTION:

A) THE CONTRACTOR SHALL BE RESPONSIBLE TO ENSURE THAT ALL REQUIRED OR NECESSARY INSPECTIONS ARE COMPLETED BY THE OWNER'S AUTHORIZED INSPECTORS PRIOR TO PROCEEDING WITH SUBSEQUENT WORK WHICH COVERS OR THAT IS DEPENDENT ON THE WORK TO BE INSPECTED. FAILURE TO OBTAIN NECESSARY INSPECTION(S) AND APPROVAL(S) SHALL RESULT IN THE CONTRACTOR BEING FULLY RESPONSIBLE FOR ALL PROBLEMS ARISING FROM UNINSPECTED WORK.

B) UNLESS OTHERWISE SPECIFIED, THE FOLLOWING TABLE OUTLINES THE MINIMUM TESTING SCHEDULE FOR THE PROJECT. THIS TESTING SCHEDULE IS NOT COMPLETE, AND DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY OF OBTAINING ALL NECESSARY INSPECTIONS FOR ALL WORK PERFORMED, REGARDLESS OF WHO IS RESPONSIBLE FOR PAYMENT.

REQUIRED TESTING AND FREQUENCY		Porty Responsible for payment: Contractor		Others (See note 1)	
STREETS, PARKING LOTS, PADS, FILLS. ETC.					
SUBGRADE	*1 TEST/4000 S.F/LIFT (2 MIN)*			✓	See note 3
AGGREGATE	*1 TEST/4000 S.F/LIFT*			✓	See note 3
ASPHALT	*1 TEST/4000 S.F/LIFT (2 MIN)*			✓	
PIPED UTILITIES, ALL					
TRENCH BACKFILL	*1 TEST/200 FOOT TRENCH/LIFT (2 MIN)*			✓	
WATER					
PRESSURE	*(TO BE WITNESSED BY ENGINEER OR APPROVING AGENCY)*	✓			
BACTERIAL WATER TEST	*PER OHD/DOH REQUIREMENTS*	✓	See note 2		
CHLORINE RESIDUAL TEST	*PER OHD/DOH REQUIREMENTS*	✓			
SANITARY SEWER					
AIR TEST	*PER CITY OR ODOT/APWA WHICHEVER IS MORE STRINGENT*	✓	See note 4		
MANDREL	*95% OF ACTUAL INSIDE DIAMETER*	✓			
TV INSPECTION	*LINES MUST BE CLEANED PRIOR TO TV WORK*	✓			
MANHOLE	*VACUUM TEST EACH MANHOLE. WITNESSED BY ENGINEER OR APPROVING AGENCY.*	✓	See note 4		
STORM					
MANDREL	*95% OF ACTUAL INSIDE DIAMETER*	✓			
TV INSPECTION	*LINES MUST BE CLEANED PRIOR TO TV WORK*	✓			

NOTE 1: OTHERS REFERS TO OWNER, ENGINEER OR APPROVING AGENCY AS APPLICABLE. CONTRACTOR RESPONSIBLE FOR SCHEDULING TESTING. ALL TESTING MUST BE COMPLETED PRIOR TO PERFORMING SUBSEQUENT WORK.

NOTE 2: TESTING MUST BE PERFORMED BY AN APPROVED INDEPENDENT TESTING AGENCY.

NOTE 3: IN ADDITION TO IN PLACE DENSITY TESTING, THE SUBGRADE AND AGGREGATE SHALL BE PROOF-ROLLED WITH A LOADED 10 YARD DUMP TRUCK PROVIDED BY THE CONTRACTOR. LOCATION AND PATTERN OF PROOF-ROLL TO BE AS DIRECTED BY THE OWNERS AUTHORIZED REPRESENTATIVE.

NOTE 4: CONTRACTOR MAY USE HYDROSTATIC TESTING IN LIEU OF VACUUM AND AIR TESTING.

PIPED UTILITIES:

A) ALL TAPPING OF EXISTING UTILITIES MUST BE DONE BY CONTRACTOR FORCES.

B) THE END OF ALL UTILITY STUBS SHALL BE MARKED WITH A 2X4 COLOR CODED AND WIRED TO PIPE STUB.

C) ALL NON-METALLIC WATER, SANITARY AND STORM SEWER PIPING SHALL HAVE AN ELECTRICALLY CONDUCTIVE INSULATED 14 GAUGE COPPER TRACER WIRE THE FULL LENGTH OF THE INSTALLED PIPE USING BLUE WIRE FOR WATER AND GREEN FOR STORM AND SANITARY PIPING. TRACER WIRE SHALL BE EXTENDED UP INTO ALL VALVE BOXES, AND MANHOLES AND CATCH BASINS. TRACER WIRE PENETRATIONS INTO MANHOLES SHALL BE WITHIN 18 INCHES OF THE RIM ELEVATION AND ADJACENT TO MANHOLE STEPS. THE TRACER WIRE SHALL BE TIED TO THE TOP MANHOLE STEP OR OTHERWISE SUPPORTED TO ALLOW RETRIEVAL FROM THE OUTSIDE OF THE MANHOLE. USE WATERPROOF FITTINGS AT ALL CONNECTIONS.

D) NO TRENCHES IN ROADS OR DRIVEWAYS SHALL BE LEFT IN AN OPEN CONDITION OVERNIGHT. ALL SUCH TRENCHES SHALL BE CLOSED BEFORE THE END OF EACH WORK DAY AND NORMAL TRAFFIC FLOWS RESTORED.

E) SANITARY SEWER LATERALS TO BE RUN TO EDGE OF R.O.W. AT 1/4" PER 12" SLOPE. LATERALS TO BE INSTALLED DOWNSTREAM OF MAINLINE CLEAN OUTS AND/OR MANHOLES. ALL CATCH BASINS TO HAVE 8" PVC. SDR-35 LATERALS. CATCH BASIN LOCATION MAY BE MODIFIED TO ACCOMMODATE LOW SPOTS CREATED DURING CONSTRUCTION. ENGINEER AND/OR CITY MAY REQUIRE ADDITIONAL CATCH BASINS TO BE PLACED AT LOW SPOTS CREATED DURING CONSTRUCTION.

F) CONTRACTOR TO MAKE MINOR ADJUSTMENT TO SERVICE LOCATIONS, WHERE NECESSARY, TO AVOID CONFLICT. MAINTAIN 5' MINIMUM SEPARATION BETWEEN STORM AND SANITARY AND 10' MIN. SEPARATION BETWEEN SANITARY AND WATER, 1' TO MANHOLES OR CATCH BASINS AND 5' BETWEEN MANHOLES AND CATCH BASINS. MAINTAIN 1' VERTICAL AND 2' HORIZONTAL SEPARATION BETWEEN COUNTY AND PRIVATE FRANCHISE UTILITY SERVICES AND 2' HORIZONTAL SEPARATION BETWEEN COUNTY UTILITIES IN A COMMON TRENCH.

PRIVATE UTILITIES:

A) UNLESS OTHERWISE SHOWN ON THE DRAWINGS OR APPROVED BY JURISDICTION HAVING AUTHORITY, ALL NEW PRIVATE UTILITIES (IRRIGATION, POWER, BROADBAND, TELEPHONE & GAS) SHALL BE INSTALLED UNDERGROUND. INSTALLATION OF PRIVATE UTILITIES IN A COMMON TRENCH WITH WATER, SANITARY SEWER OR STORM SEWER IS PROHIBITED.

B) CONTRACTOR SHALL COORDINATE WITH POWER, TELEPHONE, GAS AND BROADBAND COMPANIES FOR LOCATION OF VAULTS, PEDESTALS, ETC. ALL ABOVE GRADE FACILITIES SHALL BE PLACED IN A LOCATION OUTSIDE THE PROPOSED SIDEWALK LOCATION.

C) POWER, TELEPHONE, GAS AND BROADBAND TRENCHING AND CONDUITS SHALL BE INSTALLED PER UTILITY COMPANY REQUIREMENTS WITH PULL TAPE. CONTRACTOR SHALL VERIFY WITH UTILITY COMPANY FOR SIZE AND TYPE OF CONDUIT PRIOR TO CONSTRUCTION. ALL CHANGES IN DIRECTION OF UTILITY CONDUIT RUNS SHALL HAVE LONG RADIUS BENDS.

D) CONTRACTOR SHALL NOTIFY AND COORDINATE WITH PRIVATE UTILITY FOR RELOCATION OF POWER POLES, VAULTS, ETC.

E) ALL PRIVATE UTILITY STRUCTURES (VAULTS, PEDESTALS, LIGHT POLES., ETC.) SHALL BE SET A MINIMUM OF 1 FOOT FROM ANY PROPERTY CORNER OR SURVEY MONUMENT.

F) IRRIGATION WATERLINE TO BE FLUSHED AND PRESSURE TESTED TO 150 PSI FOR 60 MINUTES WITH NO LOSS OF PRESSURE

ABBREVIATIONS:

AASHTO – AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS
ABS – ACRYLONITRILE BUTADIENE STYRENE
APWA – AMERICAN PUBLIC WORKS ASSOCIATION
ASTM – AMERICAN SOCIETY FOR TESTING AND MATERIALS
AWWA – AMERICAN WATER WORKS ASSOCIATION
BF – BOTTOM OF FOOTING
BSW – BACK OF SIDEWALK
BW – BOTTOM OF WALL
CDF – CONTROLLED DENSITY FILL
CL – CLASS
CLR – CLEAR
CONT. – CONTINUOUS
COTG – CLEANOUT TO GRADE
C.Y. – CUBIC YARD
DCVA – DOUBLE CHECK VALVE ASSEMBLY
DEQ – OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY
DI – DUCTILE IRON
DIA., ϕ – DIAMETER
DR – DIMENSION RATIO
(E) – EXISTING
EL – ELEVATION
FDC – FIRE DEPARTMENT CONNECTION
FF – FINISH FLOOR
FG – FINISH GRADE
FL – FLANGE
FM – FORCE MAIN
FW – FIRE WATER
G.V. – GATE VALVE
H, HORIZ. – HORIZONTAL
HMAC – HOT MIX ASPHALT CONCRETE
H.S. – HIGH STRENGTH
HYD. – HYDRANT
LEN. – LENGTH
IE – INVERT ELEVATION
L.F. – LINEAL FEET
LP – LIGHT POLE
LT. – LEFT
MUTCD – MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES
MV – MEDIUM VOLTAGE
N.C. – NORMALLY CLOSED
N.O. – NORMALLY OPEN
O.C., O/C – ON CENTER
ODOT – OREGON DEPARTMENT OF TRANSPORTATION
OG – ORIGINAL GROUND
OHD – OREGON HEALTH DIVISION
(P) – PROPOSED
PC – POINT OF CURVATURE
PCC – PORTLAND CEMENT CONCRETE
P.I.V. – POST INDICATOR VALVE
PO – PUSH ON
POC – POINT ON CURVE
PRC – POINT OF REVERSE CURVATURE
PSI – POUNDS PER SQUARE INCH
PT – POINT OF TANGENCY
PVC – POLYVINYL CHLORIDE
ROW – RIGHT OF WAY
RT. – RIGHT
S – SLOPE
SAN – SANITARY
SD – STORM DRAIN
SDCB – STORM DRAIN CATCH BASIN
SDCO – STORM DRAIN CLEANOUT
SDMH – STORM DRAIN MANHOLE
SDR – STANDARD DIMENSION RATIO
S.F. – SQUARE FEET
SSCO – SANITARY SEWER CLEANOUT
SSMH – SANITARY SEWER MANHOLE
SS – SANITARY SEWER
STA – STATION
STM – STORM
SW – SIDEWALK
S.Y. – SQUARE YARD
TC – TOP OF CURB
TS – TOP OF SIDEWALK OR SLAB
TF – TOP OF FOOTING
TP – TOP OF PAVEMENT
TW – TOP OF WALL
TYP. – TYPICAL
U.N.O. – UNLESS NOTED OTHERWISE
V, VERT. – VERTICAL
SDR – STANDARD DIMENSION RATIO
S.F. – SQUARE FEET
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EXISTING

- MH
- SAN SEWER
- STORM SEWER
- CATCH BASIN
- CLEAN OUT
- (W) WATER LINE UNKNOWN DIAMETER
- (W-'X') WATER LINE 'X'" DIAMETER
- FIRE HYDRANT
- WATER VALVE
- BLOW-OFF VALVE
- WM = WATER METER
- G G G NATURAL GAS LINE
- T T T OVERHEAD TELEPHONE CABLE
- UGT UGT UNDERGROUND TELEPHONE CABLE
- FIBER FIBER OPTIC
- TEL TELEPHONE CABLE
- CATV CABLE TELEVISION
- GB GB GB GRADE BREAK
- C C C CATCH LINE
- D D D DITCH LINE
- E E E OVERHEAD ELECTRIC POWER
- UE UNDERGROUND ELECTRIC
- POWER POLE
- FENCE LINE
- EDGE OF PAVEMENT
- GUARDRAIL OR CHAIN LINK FENCE
- CULVERT
- TELEPHONE PEDESTAL
- GAS METER POWER
- E TRANSFORMER EM = ELECTRIC METER
- CONTOUR LINE
- 100 INDEX CONTOUR LINE

PROPOSED

- SAN SAN PROPOSED SAN SEWER
- STM STM PROPOSED STORM SEWER
- W W PROPOSED WATER
- HYDRANT
- WATER VALVE
- SAMPLING STATION
- WATER METER
- CONTOUR
- 330 INDEX CONTOUR

HATCH

- PROPOSED ASPHALT
- EXISTING ASPHALT
- EXISTING CONCRETE
- LANDSCAPING
- PROPOSED CONCRETE
- EXISTING GRAVEL
- PROPOSED NATIVE RESORATION
- EXISTING BUILDING
- PROPOSED BUILDING
- ASPHALT TO BE REMOVED
- PROPOSED GRAVEL

Design D.O.E. | Survey T.E.C.
DWG. No. K:\ACAD\14100\14122\14122_Utility.dwg
Date 7/31/2018 | Drawn T.E.C.
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GENERAL NOTES
FOR THE
WEST HARBOR UTILITIES PROJECT
IN THE BINGEN POINT BUSINESS PARK
BINGEN, KLICKITAT COUNTY, WASHINGTON

TENNESON ENGINEERING CORP.
CONSULTING ENGINEERS
3775 CRATES WAY
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PH. 541-296-9177 FAX 541-296-6657

PLOT DATE: 7/31/2018 K:\ACAD\14100\14122\14122_Utility.dwg

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FOR BIDDING

1" IF THIS BAR IS NOT ONE INCH, THEN ADJUST SCALES ACCORDINGLY

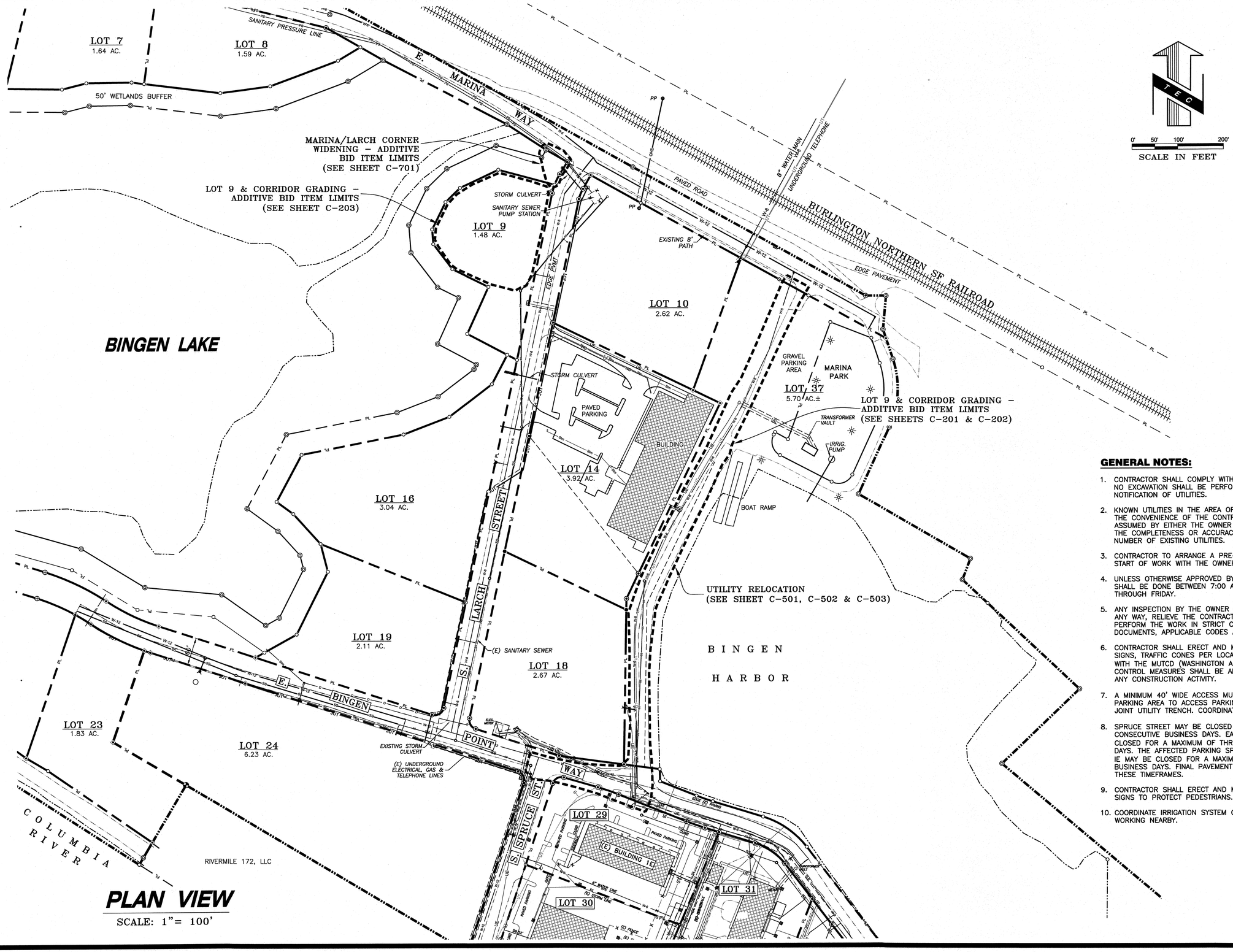
DARRIN O. ECKMAN STATE OF WASHINGTON 37209 REGISTERED PROFESSIONAL ENGINEER 11/14/19

EX. DATE: 11/14/19

NOTES

SHEET **C-001**

Work Order No. 14122



PLAN VIEW

SCALE: 1"= 100'

GENERAL NOTES:

1. CONTRACTOR SHALL COMPLY WITH STATE UTILITY LOCATE PROVISIONS. NO EXCAVATION SHALL BE PERFORMED WITHOUT PROPER NOTIFICATION OF UTILITIES.
2. KNOWN UTILITIES IN THE AREA OF WORK HAVE BEEN SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR. NO RESPONSIBILITY IS ASSUMED BY EITHER THE OWNER OR THE CONSULTING ENGINEER FOR THE COMPLETENESS OR ACCURACY OF THE LOCATIONS, TYPE, OR NUMBER OF EXISTING UTILITIES.
3. CONTRACTOR TO ARRANGE A PRE-CONSTRUCTION MEETING PRIOR TO START OF WORK WITH THE OWNER AND ENGINEER.
4. UNLESS OTHERWISE APPROVED BY THE JURISDICTION, CONSTRUCTION SHALL BE DONE BETWEEN 7:00 A.M. AND 5:00 P.M., MONDAY THROUGH FRIDAY.
5. ANY INSPECTION BY THE OWNER OR OTHER AGENCIES SHALL NOT, IN ANY WAY, RELIEVE THE CONTRACTOR FROM ANY OBLIGATION TO PERFORM THE WORK IN STRICT COMPLIANCE WITH THE CONTRACT DOCUMENTS, APPLICABLE CODES AND AGENCY REQUIREMENTS.
6. CONTRACTOR SHALL ERECT AND MAINTAIN BARRICADES, WARNING SIGNS, TRAFFIC CONES PER LOCAL REQUIREMENTS IN ACCORDANCE WITH THE MUTCD (WASHINGTON AMENDMENTS, IF ANY). ALL TRAFFIC CONTROL MEASURES SHALL BE APPROVED AND IN PLACE PRIOR TO ANY CONSTRUCTION ACTIVITY.
7. A MINIMUM 40' WIDE ACCESS MUST BE PROVIDED IN THE MARINA PARKING AREA TO ACCESS PARKING ON THE WEST SIDE OF THE JOINT UTILITY TRENCH. COORDINATE WITH OWNER.
8. SPRUCE STREET MAY BE CLOSED FOR A MAXIMUM OF TWO (2) CONSECUTIVE BUSINESS DAYS. EAST BINGEN POINT WAY MAY BE CLOSED FOR A MAXIMUM OF THREE (3) CONSECUTIVE BUSINESS DAYS. THE AFFECTED PARKING SPACES AND DRIVEWAY INTO BUILDING IE MAY BE CLOSED FOR A MAXIMUM OF FIVE (5) CONSECUTIVE BUSINESS DAYS. FINAL PAVEMENT PLACEMENT NOT INCLUDED IN THESE TIMEFRAMES.
9. CONTRACTOR SHALL ERECT AND MAINTAIN BARRICADES AND WARNING SIGNS TO PROTECT PEDESTRIANS.
10. COORDINATE IRRIGATION SYSTEM OPERATION WITH OWNER WHEN WORKING NEARBY.

SITE PLAN

FOR THE

WEST HARBOR UTILITIES PROJECT

IN THE BINGEN POINT BUSINESS PARK

BINGEN, KLICKITAT COUNTY, WASHINGTON

Design D.O.E.	Survey T.E.C.
DWG. No. K:\ACAD\14100\14122\14122_Utility.dwg	
Date 7/31/2018	Drawn T.E.C.
Work Order No. 14122	Scale 1"=100'

TENNESON ENGINEERING CORP.
CONSULTING ENGINEERS
3775 CRATES WAY
THE DALLES, OREGON 97058
PH. 541-296-9177 FAX 541-296-6657

PLOT DATE: 7/31/2018

FOR BIDDING

1"
IF THIS BAR IS NOT ONE INCH, THEN ADJUST SCALES ACCORDINGLY

DARRIN O. ECKMAN
STATE OF WASHINGTON
57209
REGISTERED
PROFESSIONAL ENGINEER

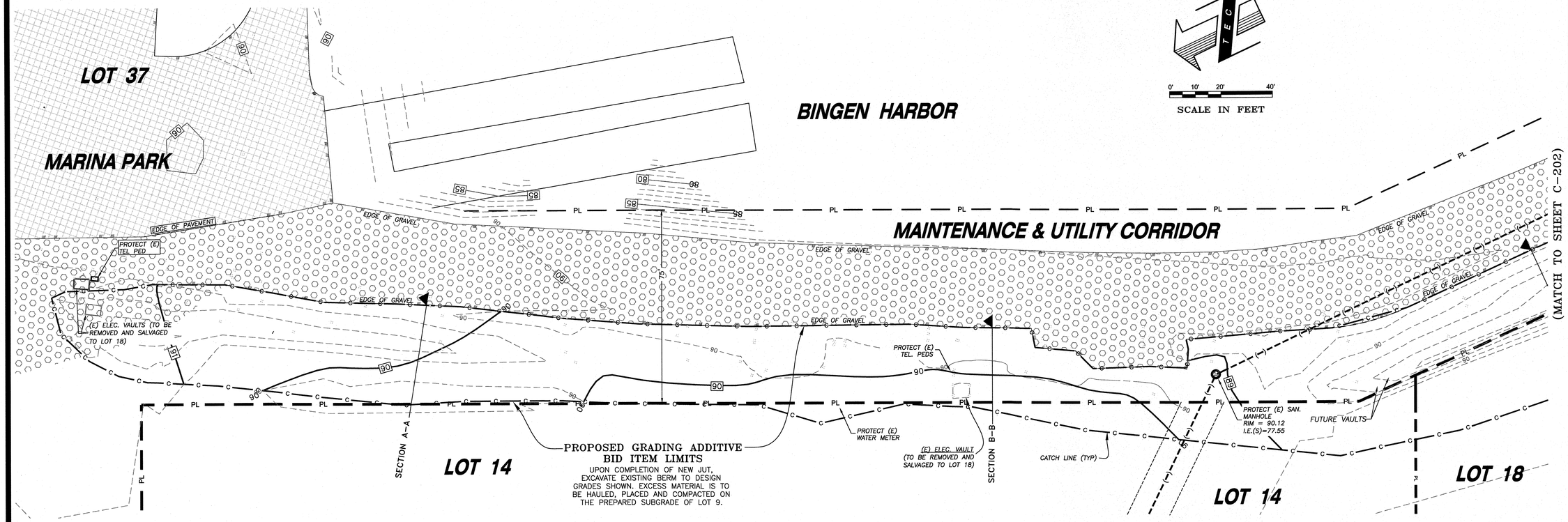
EX. DATE: 11/14/19

SITE

SHEET
C-101

Work Order No.
14122

PLOT DATE: 7/31/2018 K:\ACAD\14100\14122\14122_Utility.dwg



0' 10' 20' 40'

SCALE IN FEET

PLAN VIEW

SCALE: 1"= 20'

BASE BID NOTE:

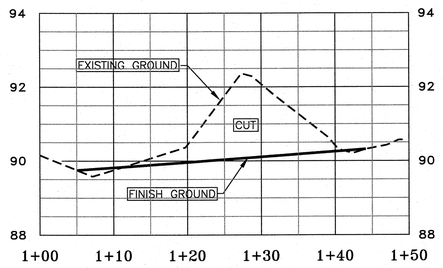
CONTRACTOR IS NOT REQUIRED TO PROVIDE GRADING SHOWN AS PART OF THE BASE BID. CONTRACTOR MAY ELECT, AT THEIR OWN COST, TO REMOVE EXISTING BERM TO FACILITATE JOINT UTILITY TRENCH INSTALLATION. USE CAUTION NEAR EXISTING GAS LINE UNTIL ABANDONED. MATERIAL MAY BE NEATLY STOCKPILE ON LOT 18 AS DIRECTED BY OWNER.

NOTES:

1. CONTOURS SHOWN ARE AT 1.0-FOOT INTERVALS UNLESS NOTED OTHERWISE.
2. MAXIMUM SLOPE TO BE 20H:1V.
3. GRADES ARE TO BE STRAIGHT BETWEEN GRADING LIMITS AND CONTOURS SHOWN.
4. COMPUTER GENERATED, SOLID EARTHWORK VOLUMES TO DESIGN GRADE:

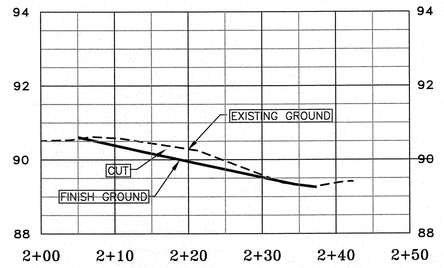
   CORRIDOR:
   ± 800 C.Y. SITE EXCAVATION INCLUDING HAUL
   ±40 C.Y. EMBANKMENT COMPACTION

   NOTE: VOLUMES PROVIDED ARE FOR THE CONTRACTOR'S CONVENIENCE ONLY. GRADING ADDITIVE BID ITEM – EARTHWORK PAY ITEM IS LUMP SUM.
5. FILLS SHALL BE PLACED IN DRY WEATHER WITH PROPER CONTROLS ON MOISTURE AND COMPACTION. FILLS SHALL BE PLACED IN THIN LIFTS AND COMPACTED TO A DRY DENSITY OF AT LEAST 95 PERCENT OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM D 698). THE THICKNESS OF THE LIFTS WILL NEED TO BE DETERMINED IN THE FIELD, AS A GENERAL RULE FOR SELF PROPELLED COMPACTORS, THE LIFTS SHALL NOT EXCEED 8 INCHES AS MEASURED IN A LOOSE CONDITION. FOR SMALL HAND COMPACTORS, THE LIFTS SHALL BE REDUCED TO 4–5 INCHES LOOSE MATERIAL.
6. WATER WILL BE USED AS NEEDED FOR DUST CONTROL DURING CONSTRUCTION ACTIVITIES.



SECTION A-A

SCALE: 1"= 10' HORIZ.
1"= 2' VERT.



SECTION B-B

SCALE: 1"= 10' HORIZ.
1"= 2' VERT.

ADDITIVE BID ITEM - GRADING

Design D.O.E. | Survey T.E.C.
DWG. No. K:\ACAD\14100\14122\14122_Utility.dwg
Date 7/31/2018 | Drawn T.E.C.
Work Order No. 14122 | Scale 1"=20'

GRADING PLAN

FOR THE

WEST HARBOR UTILITIES PROJECT

IN THE BINGEN POINT BUSINESS PARK

BINGEN, KLICKITAT COUNTY, WASHINGTON

TENNESON ENGINEERING CORP.
CONSULTING ENGINEERS
3775 CRATES WAY
THE DALLES, OREGON 97058
PH. 541-296-9177 FAX 541-296-6657

PLOT DATE: 7/31/2018 K:\ACAD\14100\14122\14122_Utility.dwg

PLOT DATE: 7/31/2018

FOR BIDDING

1" IF THIS BAR IS NOT ONE INCH, THEN ADJUST SCALES ACCORDINGLY

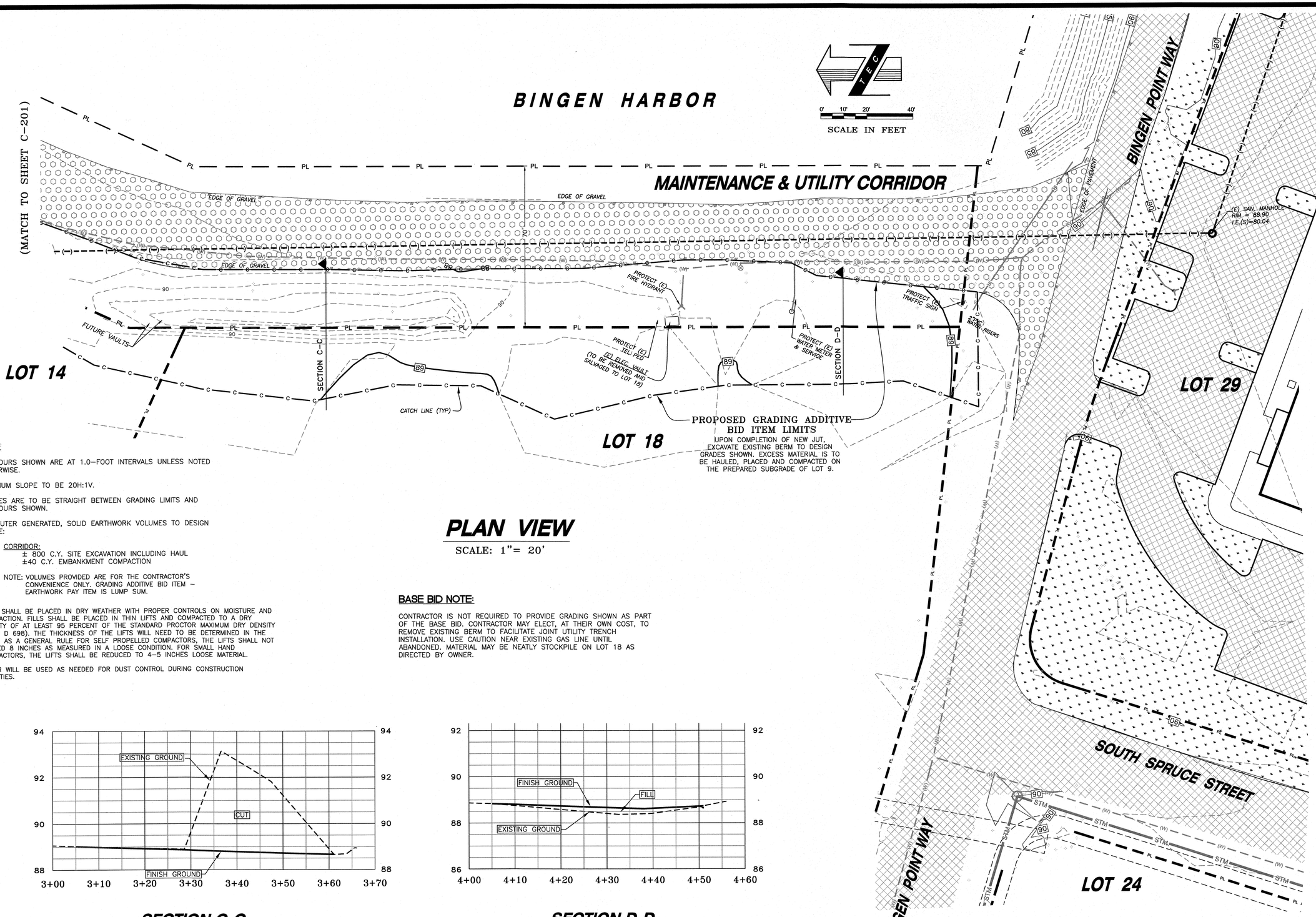
DARRIN O. ECKMAN STATE OF WASHINGTON 37209 REGISTERED PROFESSIONAL ENGINEER

EX. DATE: 11/14/19

GRADING

SHEET C-201

Work Order No. 14122



PLAN VIEW

SCALE: 1"= 20'

NOTES:

1. CONTOURS SHOWN ARE AT 1.0-FOOT INTERVALS UNLESS NOTED OTHERWISE.
2. MAXIMUM SLOPE TO BE 20H:1V.
3. GRADES ARE TO BE STRAIGHT BETWEEN GRADING LIMITS AND CONTOURS SHOWN.
4. COMPUTER GENERATED, SOLID EARTHWORK VOLUMES TO DESIGN GRADE:

   CORRIDOR:
   ± 800 C.Y. SITE EXCAVATION INCLUDING HAUL
   ±40 C.Y. EMBANKMENT COMPACTION

   NOTE: VOLUMES PROVIDED ARE FOR THE CONTRACTOR'S CONVENIENCE ONLY. GRADING ADDITIVE BID ITEM – EARTHWORK PAY ITEM IS LUMP SUM.
5. FILLS SHALL BE PLACED IN DRY WEATHER WITH PROPER CONTROLS ON MOISTURE AND COMPACTION. FILLS SHALL BE PLACED IN THIN LIFTS AND COMPACTED TO A DRY DENSITY OF AT LEAST 95 PERCENT OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM D 698). THE THICKNESS OF THE LIFTS WILL NEED TO BE DETERMINED IN THE FIELD, AS A GENERAL RULE FOR SELF PROPELLED COMPACTORS, THE LIFTS SHALL NOT EXCEED 8 INCHES AS MEASURED IN A LOOSE CONDITION. FOR SMALL HAND COMPACTORS, THE LIFTS SHALL BE REDUCED TO 4–5 INCHES LOOSE MATERIAL.
6. WATER WILL BE USED AS NEEDED FOR DUST CONTROL DURING CONSTRUCTION ACTIVITIES.

BASE BID NOTE:

CONTRACTOR IS NOT REQUIRED TO PROVIDE GRADING SHOWN AS PART OF THE BASE BID. CONTRACTOR MAY ELECT, AT THEIR OWN COST, TO REMOVE EXISTING BERM TO FACILITATE JOINT UTILITY TRENCH INSTALLATION. USE CAUTION NEAR EXISTING GAS LINE UNTIL ABANDONED. MATERIAL MAY BE NEATLY STOCKPILE ON LOT 18 AS DIRECTED BY OWNER.

SECTION C-C

SCALE: 1"= 10' HORIZ.
1"= 2' VERT.

SECTION D-D

SCALE: 1"= 10' HORIZ.
1"= 2' VERT.

ADDITIVE BID ITEM - GRADING

Design	D.O.E.
Survey	T.E.C.
DWG. No.	K:\ACAD\14100\14122\14122_Utility.dwg
Date	7/31/2018
Drawn	T.E.C.
Work Order No.	14122
Scale	1"= 20'

GRADING PLAN

FOR THE

WEST HARBOR UTILITIES PROJECT

IN THE BINGEN POINT BUSINESS PARK

BINGEN, KLICKITAT COUNTY, WASHINGTON

TENNESON ENGINEERING CORP.
CONSULTING ENGINEERS
3775 CRATES WAY
THE DALLES, OREGON 97058
PH. 541-296-9177 FAX 541-296-6657

PLOT DATE: 7/31/2018 K:\ACAD\14100\14122\14122_Utility.dwg

PLOT DATE: 7/31/2018

FOR BIDDING

1" IF THIS BAR IS NOT ONE INCH, THEN ADJUST SCALES ACCORDINGLY

DARRIN O. ECKMAN STATE OF WASHINGTON 37209 REGISTERED PROFESSIONAL ENGINEER

EX. DATE: 11/14/19

GRADING

SHEET
C-202

Work Order No.
14122

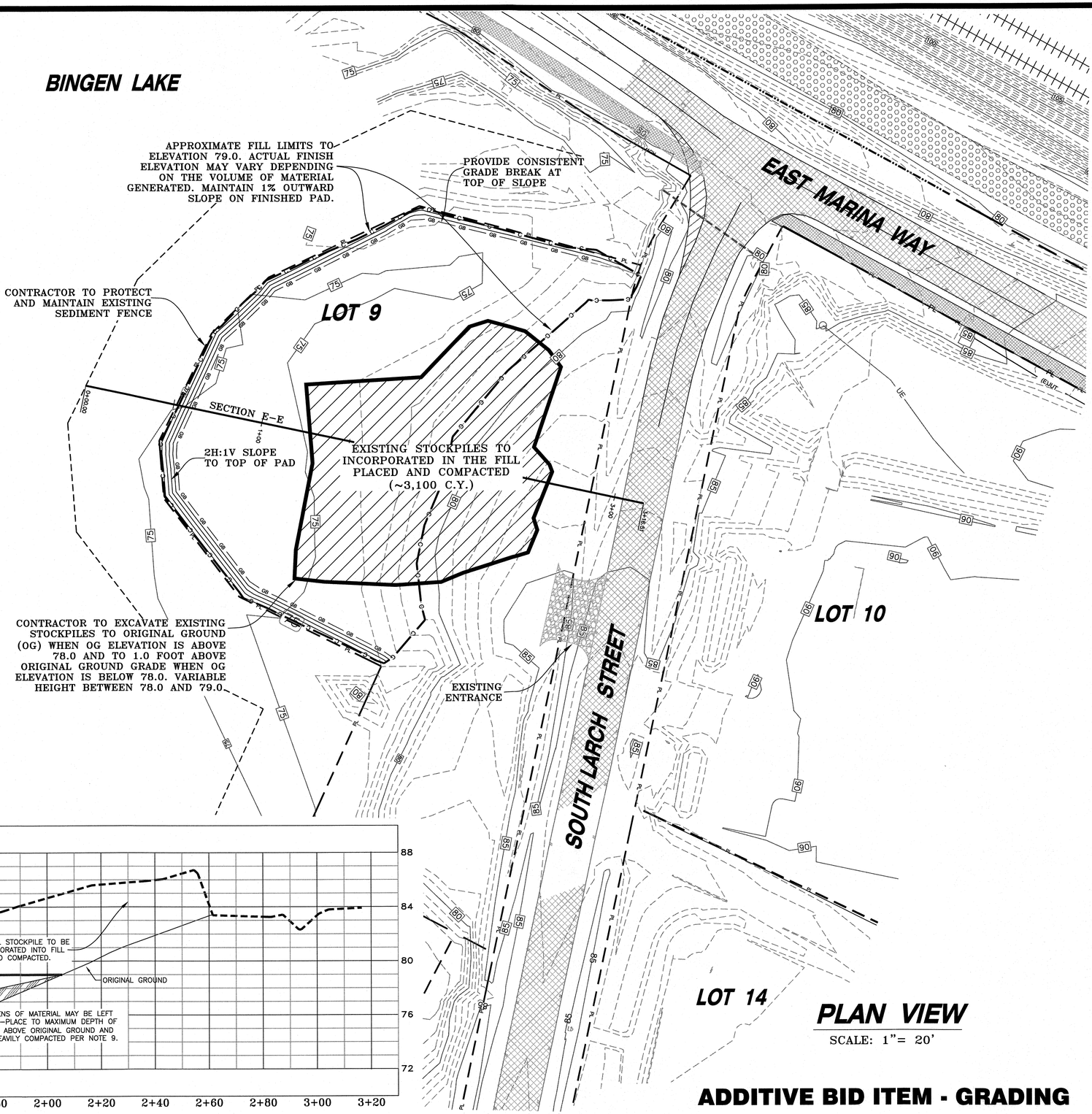
NOTES:

1. CONTOURS SHOWN ARE AT 1.0–FOOT INTERVALS UNLESS NOTED OTHERWISE.
2. MAXIMUM SLOPE TO BE 2H:1V.
3. GRADES ARE TO BE STRAIGHT BETWEEN GRADING LIMITS AND GRADE BREAKS SHOWN.
4. COMPUTER GENERATED, SOLID EARTHWORK VOLUMES TO DESIGN GRADE:

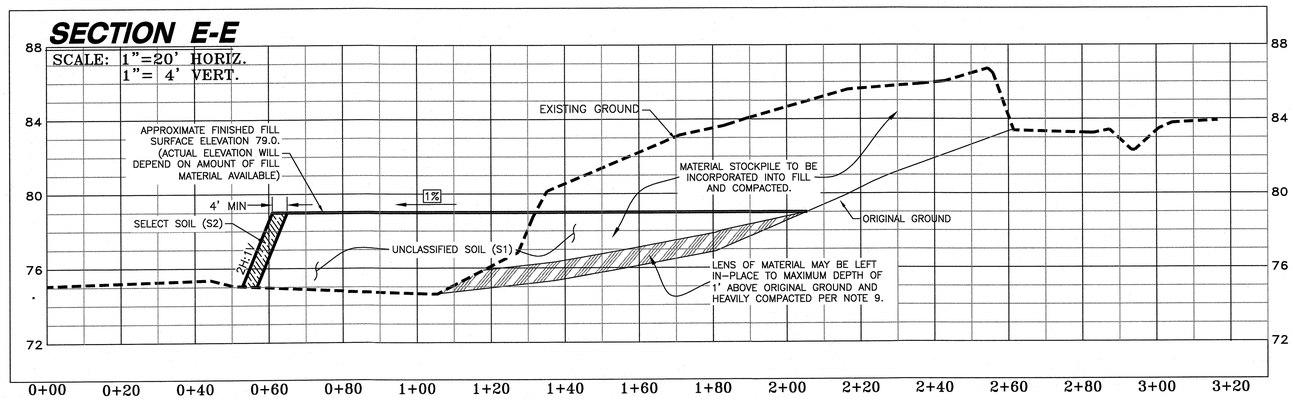
   LOT 9:
   ± 3,100 C.Y. SITE EXCAVATION
   ± 3,100 C.Y. EMBANKMENT COMPACTION

   NOTE:
   VOLUMES PROVIDED ARE FOR THE CONTRACTOR'S CONVENIENCE ONLY. GRADING ADDITIVE BID ITEM – EARTHWORK PAY ITEM IS LUMP SUM.
5. FILLS SHALL BE PLACED IN DRY WEATHER WITH PROPER CONTROLS ON MOISTURE AND COMPACTION. FILLS SHALL BE PLACED IN THIN LIFTS AND COMPACTED TO A DRY DENSITY OF AT LEAST 95 PERCENT OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM D 698). THE THICKNESS OF THE LIFTS WILL NEED TO BE DETERMINED IN THE FIELD, AS A GENERAL RULE FOR SELF PROPELLED COMPACTORS, THE LIFTS SHALL NOT EXCEED 8 INCHES AS MEASURED IN A LOOSE CONDITION. FOR SMALL HAND COMPACTORS, THE LIFTS SHALL BE REDUCED TO 4–5 INCHES LOOSE MATERIAL.
6. WATER WILL BE USED AS NEEDED FOR DUST CONTROL DURING CONSTRUCTION ACTIVITIES.
7. REMOVE AND DISPOSE OF MATERIAL WITH DENSE VEGETATION ON LOT 9 AS DIRECTED BY OWNER. MATERIAL ON OR WITHIN 4 FEET OF FACE OF SLOPE TO HAVE NO ROCKS LARGER THAN 1" IN DIMENSION AND CONSIST OF NO MORE THAN 10% ROCKS (BY VOLUME).
8. REMOVE ANY ROCKS GREATER THAN 24" IN DIMENSION AND STACK IN BERM AT NORTH EDGE OF LOT. AVOID 'NESTING' REMAINING ROCKS IN FILL.
9. HEAVILY COMPACT SUBGRADE WITH A 20,000 LB VIBRATORY ROLLER PRIOR TO PLACING FILL.

0' 10' 20' 40'
SCALE IN FEET



PLAN VIEW
SCALE: 1"= 20'



ADDITIVE BID ITEM - GRADING

GRADING PLAN
FOR THE
WEST HARBOR UTILITIES PROJECT
IN THE BINGEN POINT BUSINESS PARK
BINGEN, KLICKITAT COUNTY, WASHINGTON

Design D.O.E.	Survey T.E.C.
DWG. No. K:\ACAD\14100\14122\14122_Utility.dwg	
Date 7/31/2018	Drawn T.E.C.
Work Order No. 14122	Scale 1"=20'

TENNESON ENGINEERING CORP.
CONSULTING ENGINEERS
3775 CRATES WAY
THE DALLES, OREGON 97058
PH. 541-296-9177 FAX 541-296-6657

PLOT DATE: 7/31/2018 K:\ACAD\14100\14122\14122_Utility.dwg

PLOT DATE: 7/31/2018

FOR BIDDING

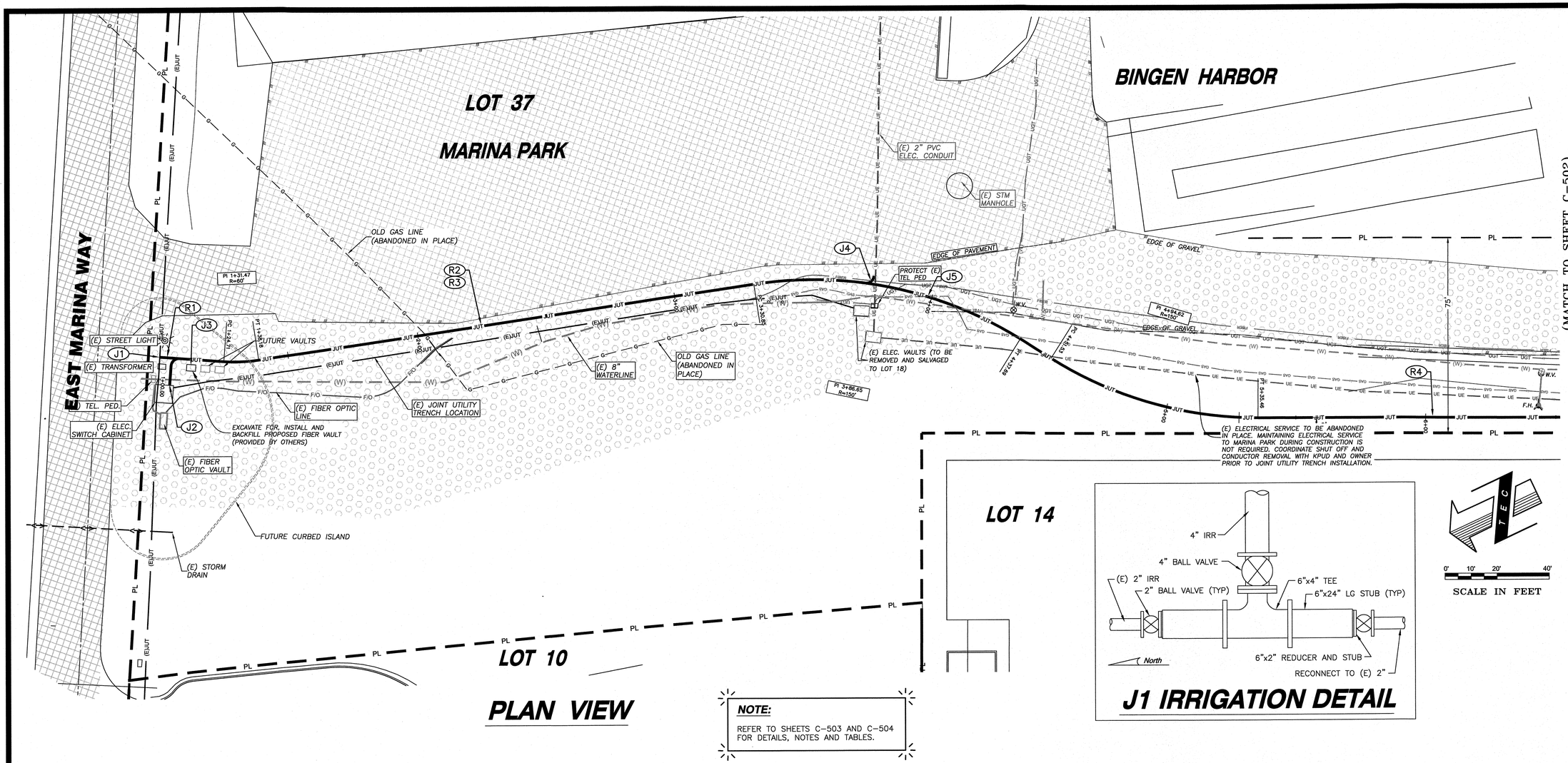
1"
IF THIS BAR IS NOT ONE INCH, THEN ADJUST SCALES ACCORDINGLY

DARRIN O. ECKMAN
STATE OF WASHINGTON
37309
REGISTERED PROFESSIONAL ENGINEER
EX. DATE: 11/14/19

GRADING

SHEET
C-203

Work Order No.
14122



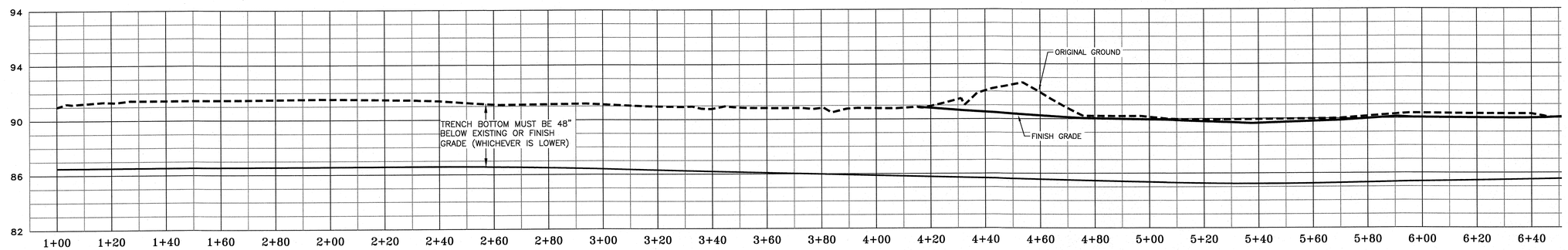
J1 IRRIGATION DETAIL

SCALE IN FEET

PLAN VIEW

NOTE:

REFER TO SHEETS C-503 AND C-504 FOR DETAILS, NOTES AND TABLES.



PROFILE

SCALE: 1"= 20' HORIZ.
1"= 2' VERT.

(MATCH TO SHEET C-502)

Design D.O.E.	Survey T.E.C.
DWG. No. K:\ACAD\14100\14122\14122_Utility.dwg	
Date 7/31/2018	Drawn T.E.C.
Work Order No. 14122	Scale 1"=20'

UTILITY PLAN

FOR THE

WEST HARBOR UTILITIES PROJECT

IN THE BINGEN POINT BUSINESS PARK

BINGEN, KLICKITAT COUNTY, WASHINGTON

TENNESON ENGINEERING CORP.
CONSULTING ENGINEERS
3775 CRATES WAY
THE DALLES, OREGON 97058
PH. 541-296-9177 FAX 541-296-6657

PLOT DATE: 7/31/2018 K:\ACAD\14100\14122\14122_Utility.dwg

PLOT DATE: 7/31/2018

FOR BIDDING

1"
IF THIS BAR IS NOT ONE INCH, THEN ADJUST SCALES ACCORDINGLY

DARRIN O. ECKMAN
STATE OF WASHINGTON
57209
REGISTERED
PROFESSIONAL ENGINEER

EX. DATE: 11/14/19

UTILITY

SHEET
C-501

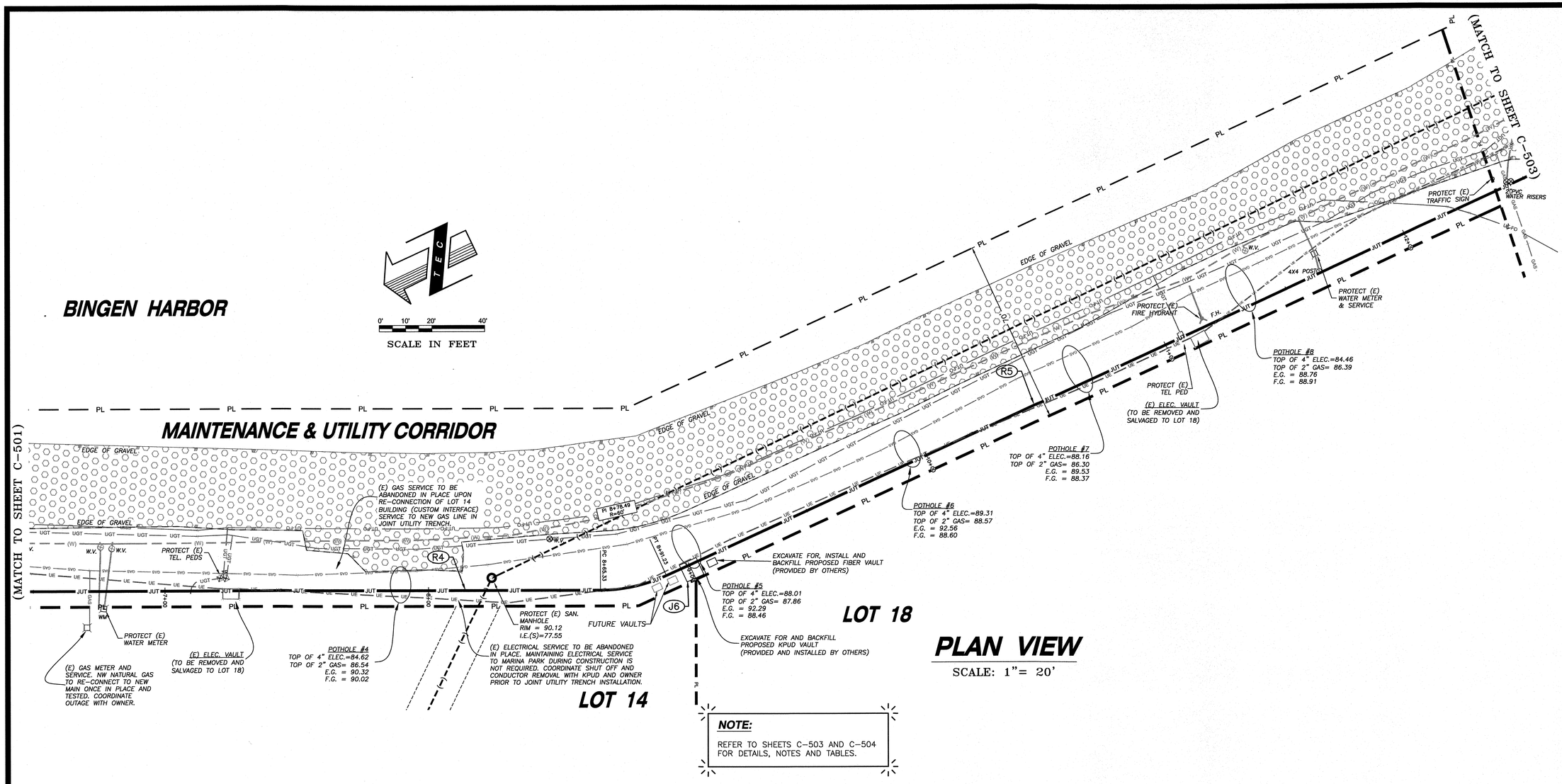
Work Order No.
14122

BINGEN HARBOR

0' 10' 20' 40'

SCALE IN FEET

MAINTENANCE & UTILITY CORRIDOR

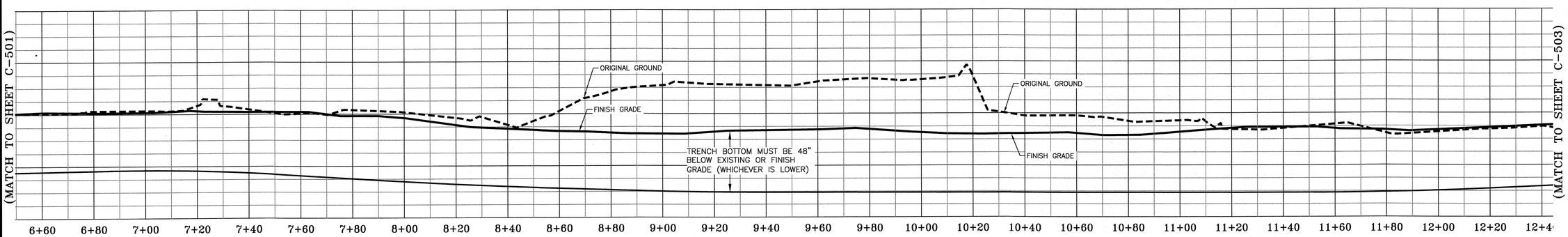


PLAN VIEW

SCALE: 1"= 20'

NOTE:

REFER TO SHEETS C-503 AND C-504 FOR DETAILS, NOTES AND TABLES.



PROFILE

SCALE: 1"= 20' HORIZ.
1"= 2' VERT.

Design D.O.E.	Survey T.E.C.
DWG. No. K:\ACAD\14100\14122\14122_Utility.dwg	
Date 7/31/2018	Drawn T.E.C.
Work Order No. 14122	Scale 1"=20'

UTILITY PLAN

FOR THE

WEST HARBOR UTILITIES PROJECT

IN THE BINGEN POINT BUSINESS PARK

BINGEN, KLICKITAT COUNTY, WASHINGTON

TENNESON ENGINEERING CORP.
CONSULTING ENGINEERS
3775 CRATES WAY
THE DALLES, OREGON 97058
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PLOT DATE: 7/31/2018 K:\ACAD\14100\14122\14122_Utility.dwg

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FOR BIDDING

1"

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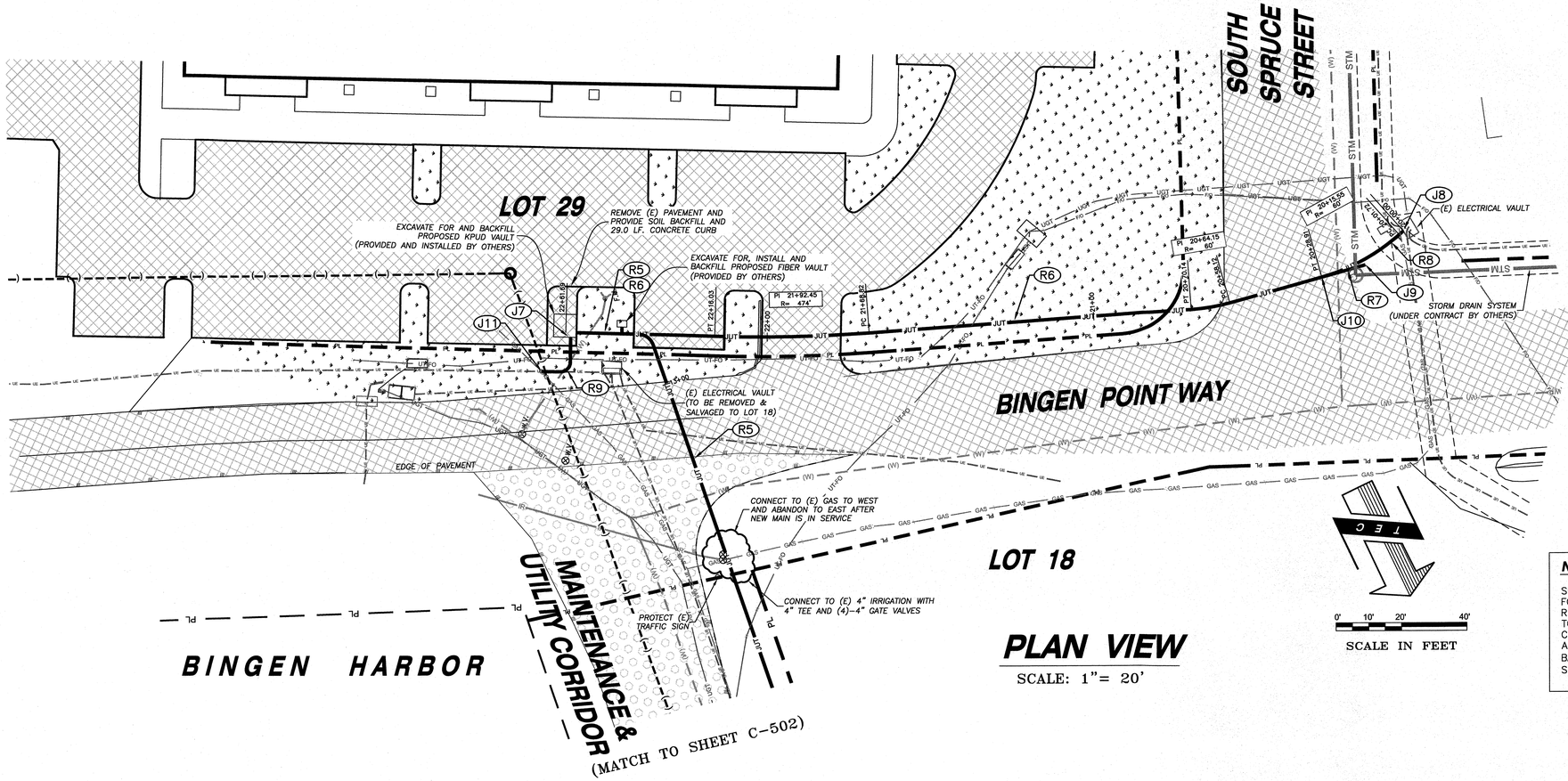
DARRIN O. ECKMAN
STATE OF WASHINGTON
37209
REGISTERED
PROFESSIONAL ENGINEER

EX. DATE: 11/14/19

UTILITY

SHEET
C-502

Work Order No.
14122



PLAN VIEW

SCALE: 1"= 20'

LEGEND:

- J3 – JUNCTION NUMBER
- R3 – RUN NUMBER
- PWR: – POWER
- TEL: – TELEPHONE
- GAS: – NATURAL GAS
- TBD – TO BE DETERMINED
- ☼ – STREET LIGHT

NOTE:

SURFACE RESTORATION IS NOT SHOWN FOR CLARITY. THE CONTRACTOR MUST RESTORE ALL SURFACING AND CURBS TO PRE–CONSTRUCTION MATERIAL AND CONDITION. THE IRRIGATED LANDSCAPE AREAS REQUIRE SELECT TOPSOIL BACKFILL IN THE 6" OF THE TRENCH. SEEDING/SOD IS NOT REQUIRED.

(MATCH TO SHEET C–502)

JOINT UTILITY NOTES:

1) BED AND SURROUND (6") GAS LINE IN SAND. BACKFILL MATERIAL WITHIN 4" OF ALL OTHER UTILITIES TO PASS THROUGH A 3/4" SIEVE.

   CONDUIT TO HAVE THE FOLLOWING SWEEPS:
   PHONE, COMM/DATA = 36" RADIUS
   ELECTRICAL = 36" RADIUS

   MAINTAIN THE FOLLOWING CLEARANCES AT CROSSINGS OF WATER, SEWER AND STORM MAINS:
   ELECTRICAL = 12"
   ALL OTHERS = 6"

2) ELECTRICAL VAULTS, TELEPHONE PEDESTALS, AND COMM/DATA VAULTS TO BE PLACED AT FINISH GRADE.

3) VAULTS TO BE PLACED ADJACENT TO JOINT UTILITY TRENCH. SWEEP CONDUITS AS REQUIRED.

4) CONTRACTOR TO LAY CONDUIT ON A MINIMUM 60' RADIUS AS REQUIRED.

5) CONTRACTOR TO PROVIDE A PVC ASTM D2241 (DR21) SOLVENT WELD IRRIGATION LINE (SIZE AS NOTED). PIPE TO BE PRESSURE TESTED TO 150 PSI AND HAVE TRACER WIRE INSTALLED.

6) CONTRACTOR TO PROVIDE 2" PVC SCH 40 SOLVENT WELD IRRIGATION CONDUIT, FITTINGS AND 'MULE' PULL TAPE.

7) CONTRACTOR TO PROVIDE ALL COMM/DATA CONDUIT, FITTINGS (NOT ALL ARE SHOWN) AND 'MULE' PULL TAPE. INSTALL FURNISHED VAULTS ON 4" CONDUIT. SWEEP 2" CONDUITS TO 2' ABOVE GRADE.

8) CONTRACTOR TO NOTE THAT THIS PROJECT WILL REQUIRE CLOSE COORDINATION WITH NW NATURAL AND THE OWNER TO MAINTAIN GAS SERVICE TO LOT 14 DURING CONSTRUCTION.

9) ELECTRICAL SERVICE TO MARINA PARK IS NOT REQUIRED DURING CONSTRUCTION. COORDINATE WITH THE OWNER AND KPUD TO DE–ENERGIZE THE CIRCUIT AND REMOVE THE CONDUCTOR PRIOR TO JOINT UTILITY TRENCH INSTALLATION.

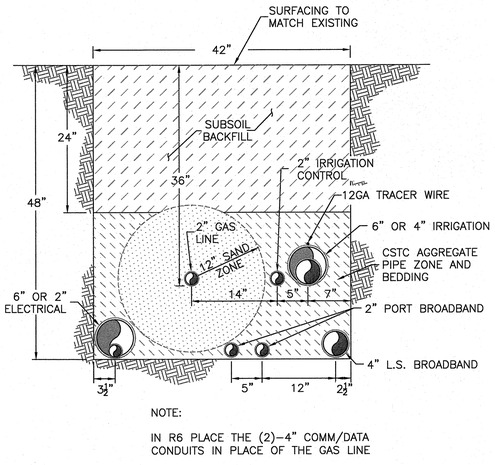
10) KPUD TO PERFORM ELECTRICAL INFRASTRUCTURE INSTALLATION AND REMOVAL WITH ASSISTANCE OF THE CONTRACTOR.

11) ELECTRICAL VAULTS AND SWITCH CABINETS TO BE SALVAGED AND STOCKPILED ON LOT 18 AS DIRECTED.

12) CONTRACTOR TO INSTALL KPUD FURNISHED CONDUIT AND WARNING TAPE. KPUD TO FURNISH AND INSTALL VAULTS AND CONDUIT PENETRATIONS INTO VAULTS. CONTRACTOR TO PROVIDE EXCAVATION AND BACKFILL OF VAULTS. ALL CONTRACTOR WORK MUST BE INSPECTED AND APPROVED BY KPUD PRIOR TO COVER.

13) CONTRACTOR TO ADJUST ALL EXISTING WATER VALVE CANS, METERS, ETC. TO PROPOSED GRADE.

14) CONTRACTOR TO RESTORE ALL DISTURBED SURFACING TO PRE–CONSTRUCTION CONDITIONS (U.N.O).



NOTE:

IN R6 PLACE THE (2)–4" COMM/DATA CONDUITS IN PLACE OF THE GAS LINE

JOINT UTILITY TRENCH DETAIL

SCALE: 1"= 1'

J.U.T. RUN TABLE

RUN NO.	FROM	TO	LENGTH	ELECTRIC	IRRIGATION	IRR CONTROLS	GAS	COMM/DATA L.S.	COMM/DATA PORT	NOTES
R1	J1	J3	12'	––	(1)–4"	(1)–2"	––	––	––	
R2	J2	J4	283'	(1)–2"	––	––	––	––	––	
R3	J3	J5	286'	––	(1)–4"	(1)–2"	––	(1)–4"	(2)–2"	
R4	J5	J6	503'	(1)–6"	(1)–4"	(1)–2"	(1)	(1)–4"	(2)–2"	
R5	J6	J7	440'	(1)–6"	(1)–4"	(1)–2"	(1)	(1)–4"	(2)–2"	
R6	J7	J10	233'	(1)–6"	(1)–6"	(1)–2"	––	(1)–4"	(2)–2"	PROVIDE (2)–4" COMM/DATA CONDUITS FROM 20+00 TO 21+50
R7	J10	J9	14'	––	(1)–6"	(1)–2"	––	(1)–4"	(2)–2"	
R8	J10	J8	29'	(1)–6"	––	––	––	––	––	
R9	J7	J11	18	(1)–6"	––	––	(1)	––	––	

J.U.T. JUNCTION TABLE

J.C.T. NO.	ELECTRIC	IRR MAIN	IRR CONTROL	GAS	COMM/DATA L.S.	COMM/DATA PORT	NOTES
J1	––	CONNECT	(1)–RISER	––	––	––	CONNECT TO (E) 2" IRR SEE DETAIL
J2	CONNECT	––	––	––	––	––	CONNECT TO (E) ELEC. SWITCH VAULT
J3	––	––	––	––	(1)–VAULT	(2)–RISERS	
J4	CONNECT	––	––	––	––	––	CONNECT TO (E) 2" ELECTRIC CONDUIT TO MARINA PARK & (E) 6" ELEC. CONDUIT NEAR SWITCH VAULT.
J5	––	––	––	CONNECT	––	––	CONNECT TO (E) GAS NORTH. ABANDON GAS SOUTH
J6	(1)–VAULT	––	(2)–RISER	––	(1)–VAULT	(4)–RISER	
J7	(1)–VAULT	––	(2)–RISER	––	(1)–VAULT	(4)–RISER	
J8	CONNECT	––	––	––	––	––	CONNECT TO (E) ELEC. SWITCH VAULT
J9	––	CONNECT	(1)–RISER	––	CONNECT	CONNECT	EXTEND CONDUITS SOUTH AND WEST (BY OTHERS) CONNECT TO (E) IRRIGATION (BY OTHERS)
J10	––	––	––	––	––	––	
J11	CONNECT	––	––	CONNECT	––	––	CONNECT TO (E) GAS & ELEC. RUNNING EAST ON EBPW

Design D.O.E. | Survey T.E.C.
DWG. No. K:\ACAD\14100\14122\14122_Utility.dwg
Date 7/31/2018 | Drawn T.E.C.
Work Order No. 14122 | Scale 1"=20'

UTILITY PLAN

FOR THE

WEST HARBOR UTILITIES PROJECT

IN THE BINGEN POINT BUSINESS PARK

BINGEN, KLICKITAT COUNTY, WASHINGTON

TENNESON ENGINEERING CORP.
CONSULTING ENGINEERS
3775 CRATES WAY
THE DALLES, OREGON 97058
PH. 541–296–9177 FAX 541–296–6657

PLOT DATE: 7/31/2018 K:\ACAD\14100\14122\14122_Utility.dwg

PLOT DATE: 7/31/2018

FOR BIDDING

1" IF THIS BAR IS NOT ONE INCH, THEN ADJUST SCALES ACCORDINGLY

DARRIN O. ECKMAN STATE OF WASHINGTON 37209 REGISTERED PROFESSIONAL ENGINEER

EX. DATE: 11/14/19

UTILITY

SHEET C-503

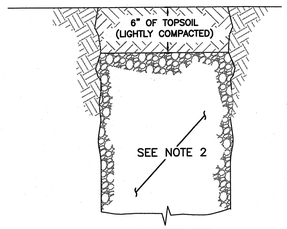
Work Order No. 14122

Main Size	6"		8"			10"				12"				
Branch Size	4"	6"	4"	6"	8"	4"	6"	8"	10"	4"	6"	8"	10"	12"
Tee	1'	14'	1'	44'	87'	1'	29'	75'	112'	1'	14'	64'	103'	139'
Reducer	51'	--	92'	54'	--	125'	95'	52'	--	157'	132'	96'	53'	--
90 Bend	32'		42'			50'				58'				
45 Bend	14'		18'			21'				24'				
22.5 Bend	7'		9'			10'				12'				
11.25 Bend	4'		5'			5'				6'				
22.5 Vert	20' / 4'		26' / 5'			31' / 6'				36' / 7'				
Dead End	98'		128'			154'				181'				

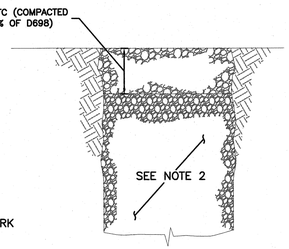
GENERAL NOTES

1. RESTRAINED LENGTHS OBTAINED WITH EBAA IRON SALES "RESTRAINT LENGTH CALCULATOR" SOFTWARE.
2. LENGTHS BASED ON THE FOLLOWING:
   SOIL TYPE – GM/SM
   SAFETY FACTOR – 2
   TRENCH TYPE – 5
   COVER DEPTH – 3 ft
   TEST PRESSURE – 200 psi
3. IF DIFFERENT CONDITIONS EXIST, NEW LENGTHS MUST BE CALCULATED.

PIPE THRUST RESTRAINT LENGTH



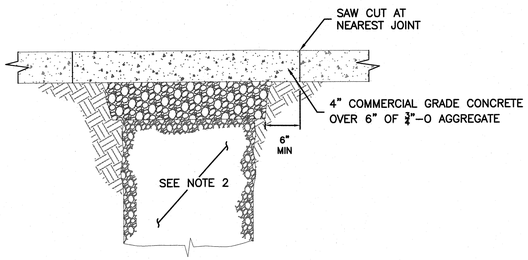
NATIVE
(SEE NOTE 3)



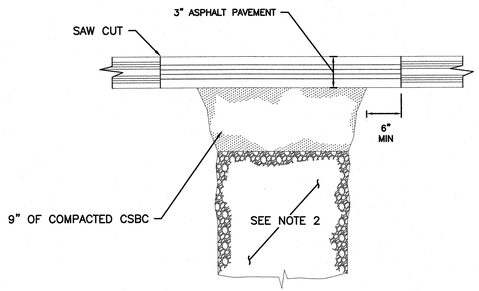
GRAVEL

GENERAL NOTES FOR ALL DETAILS

1. SURFACE RESTORATION IS INCIDENTAL TO THE TRENCH WORK AND WILL NOT BE MEASURED OR PAID FOR SEPARATELY.
2. COMPACTED TRENCH BACKFILL (AS SPECIFIED), PIPE ZONE AND PIPE BEDDING PER DETAIL.
3. NATIVE RESTORATION AREAS TO BE HYDROSEEDED WITH MULCH AND FERTILIZER (BY OTHERS).



CONCRETE



HMAC
(SEE NOTE 5)

TYPICAL TRENCH RESTORATION DETAILS

SCALE: NONE

14-JUL-2014 rd250.dgn

THRUST BLOCKING

TABLE A
CONCRETE THRUST BLOCKING (HORIZONTAL)

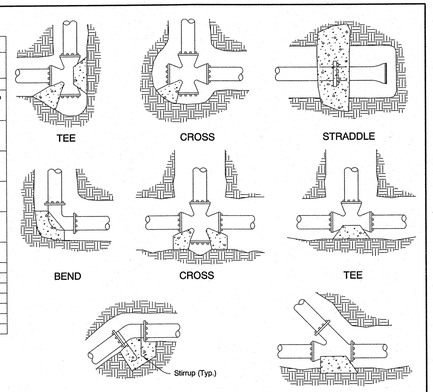
PIPE DIA.	Table Pressure PSI	Thrust (T) at fittings in Pounds A Tee & Dead Ends	B 90 deg Bend	C 45 deg Bend	D 22.5 deg Bend	E 11.25 deg Bend
4"	250	3035	4320	2315	1215	610
6"	250	6860	9735	5215	2720	1375
8"	250	12185	17310	9265	4835	2430
10"	250	19045	27045	14480	7560	3800
12"	250	27405	38940	20840	10880	5465
14"	250	37320	53010	28370	14815	7445
16"	250	48740	69245	37050	19360	9735

TABLE B

Soil Type	Soil Bearing Capacity (B) in PSF
Muck, peat, etc.	0
Soft Clay	1000
Sand	2000
Sand and gravel	3000
Sand and gravel cemented with clay	4000
Hard shale	10,000

TABLE C
CONCRETE BLOCKING FOR CONVEX VERTICAL BENDS

PIPE DIA. in.	Table Pressure PSI	Bend Angle (deg)	Concrete Volume (cy)	Cube Size (ft)	Stirrup Dia. (in)	Stirrup Embmt. (in)	Stirrup Bar #
4"	250	11.25	0.21	1.8			
		22.5	0.43	2.3	⅜	17	5
		45	0.77	2.8			
6"	250	11.25	0.48	2.4			
		22.5	0.95	3.0	⅜	17	5
		45	1.79	3.6			
8"	250	11.25	0.86	2.9			
		22.5	1.65	3.5	⅜	17	5
		45	3.22	4.4			
10"	250	11.25	1.39	3.3			
		22.5	2.62	4.1	⅜	17	5
		45	4.97	4.1			
12"	250	11.25	1.94	3.7			
		22.5	3.91	4.7	⅜	17	5
		45	6.89	5.7	⅞	24	7
14"	250	11.25	2.62	4.1	⅜	17	5
		22.5	5.26	5.2	¾	20	6
		45	9.70	6.4	1	27	8
16"	250	11.25	3.44	4.5	⅜	17	5
		22.5	6.89	5.7	⅞	24	7
		45	12.63	7.0	1⅛	30	9



THRUST BLOCK BEARING AREA EQUATION

NOTE: WHEN THRUST BLOCK BEARING AREA IS NOT SPECIFIED ON THE PLANS OR DETERMINED BY THE ENGINEER, USE THE FOLLOWING PROCEDURE TO DETERMINE REQUIRED BEARING AREA.

1. Determine thrust (T) for type of fitting or joint and size of pipe from Table A.
2. Determine Design (Test) Pressure from Standard Specifications or Special Provisions.
3. Determine Table Pressure from Table A.
4. Determine Soil Bearing Capacity (B) of soil from Table B.
5. Determine required bearing area (A) in sq. ft. as follows:

$$\text{Thrust Block Bearing Area} = A = \left(\frac{T}{B}\right)\left(\frac{\text{Design (Test) Pressure}}{\text{Table Pressure}}\right)$$

Example: Design (Test) Pressure = 150 PSI
Pipe = 14"
Fitting = Tee
Soil = Sand

From Table A, T = 37320
From Table B, B = 2000

$$A = \left(\frac{37320}{2000}\right)\left(\frac{150}{250}\right) = 11.2 \text{ sq ft}$$

RD250

GENERAL NOTES FOR ALL DETAILS:

1. Contractor to provide blocking adequate to withstand full test pressure.
2. Pour concrete blocking against undisturbed earth.
3. All concrete shall be commercial grade concrete.
4. Wrap pipe and/or fittings with 2 layers of polyethylene film where in contact with concrete
5. Keep concrete clear of all joints and accessories.
6. Stirrups shall be deformed galvanized cold rolled steel AASHTO M31 (ASTM A615), Grade 60. Coat with coal tar epoxy after installation.

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.

CALC. BOOK NO. N/A
BASELINE REPORT DATE 14-JUL-2014
NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications

OREGON STANDARD DRAWINGS

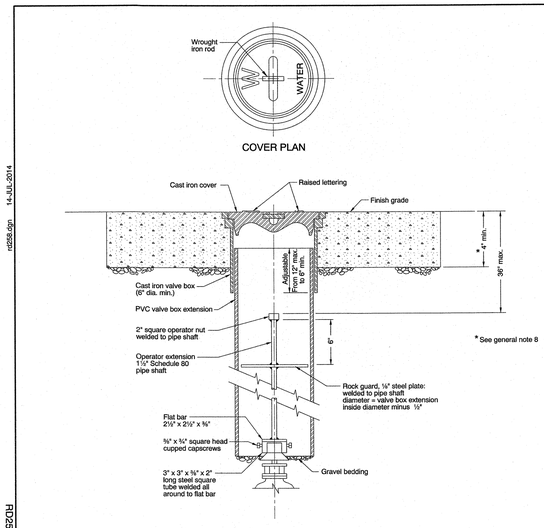
THRUST BLOCKING

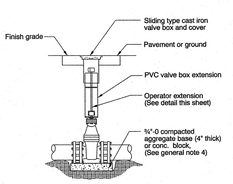
2015

DATE	REVISION DESCRIPTION

Effective Date: December 1, 2015 - May 31, 2016 RD250

14-JUL-2014 rd258.dgn





GENERAL NOTES FOR ALL DETAILS:

1. Valve box not to rest on operating assembly.
2. Operator extension required when valve nut is deeper than 4' from finish grade.
3. Center valve box on axis of operator nut.
4. Valves 12" and smaller shall be provided with compacted aggr. base on undisturbed ground. Valves greater than 12" shall be installed on precast concrete block, (4" thick).
5. Welds shall be minimum ¼" all around.
6. Hot dip galvanize operator extension after fabrication.
7. Casting shall meet H20 load requirement.
8. Provide concrete or asphalt pad (24" square, 4" thick), when required.

CALC. BOOK NO. N/A
BASELINE REPORT DATE 14-JUL-2014
NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.

OREGON STANDARD DRAWINGS

VALVE BOX AND OPERATOR EXTENSION ASSEMBLY

2015

DATE	REVISION DESCRIPTION

Effective Date: December 1, 2015 - May 31, 2016 RD258

RD258

Design D.O.E. | Survey T.E.C.
DWG. No. K:\ACAD\14100\14122\14122_Utility.dwg
Date 7/31/2018 | Drawn T.E.C.
Work Order No. 14122 | Scale 1" = 20'

UTILITY DETAILS

FOR THE

WEST HARBOR UTILITIES PROJECT

IN THE BINGEN POINT BUSINESS PARK

BINGEN, KLICKITAT COUNTY, WASHINGTON

TENNESON ENGINEERING CORP.
CONSULTING ENGINEERS
3775 CRATES WAY
THE DALLES, OREGON 97058
PH. 541-296-9177 FAX 541-296-6657

PLOT DATE: 7/31/2018 K:\ACAD\14100\14122\14122_Utility.dwg

PLOT DATE: 7/31/2018

FOR BIDDING

1"
IF THIS BAR IS NOT ONE INCH, THEN ADJUST SCALES ACCORDINGLY

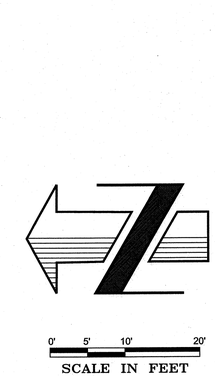
DARRIN O. ECKMAN
STATE OF WASHINGTON
37209
REGISTERED
PROFESSIONAL ENGINEER

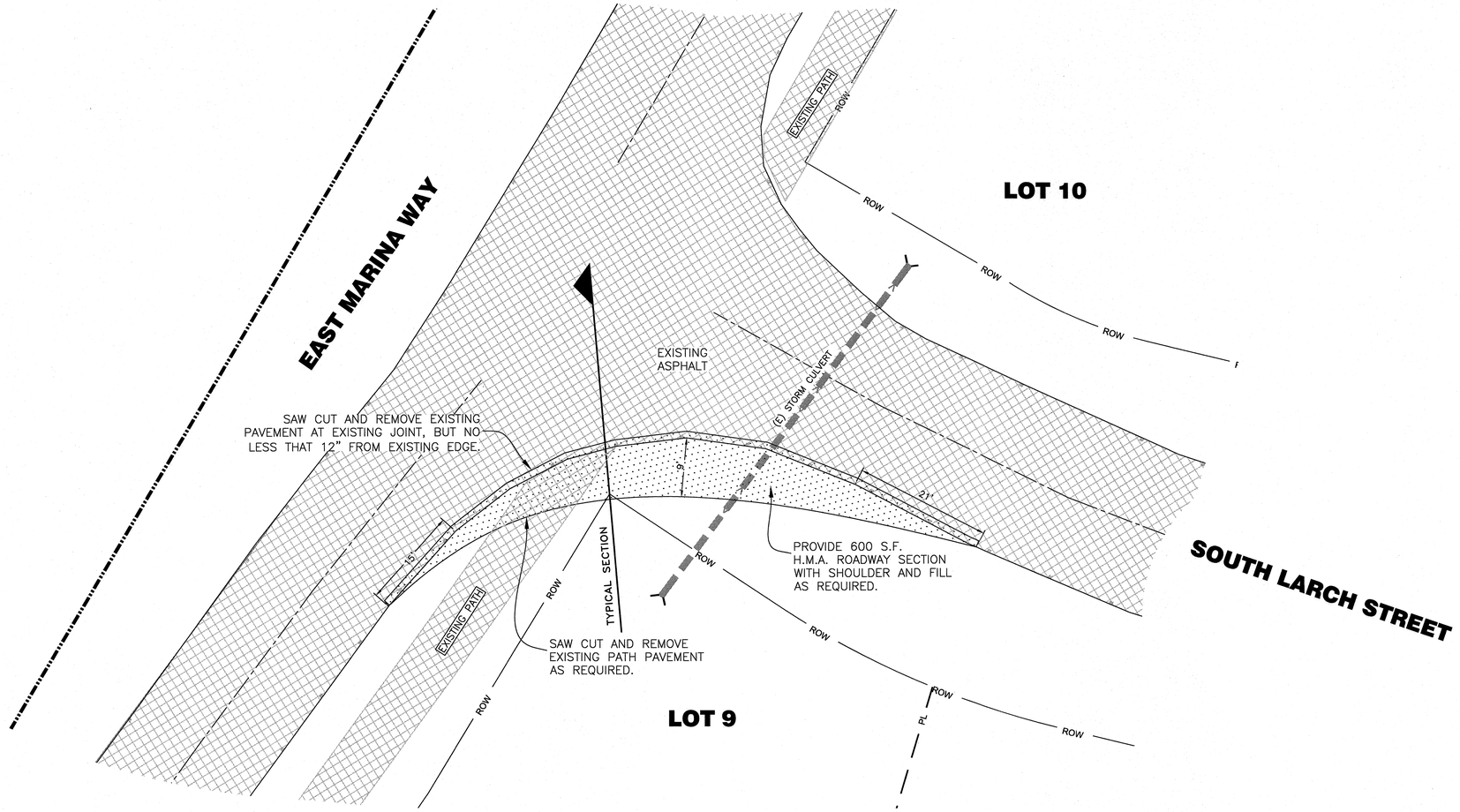
EX. DATE: 11/14/19

UTILITY

SHEET
C-504

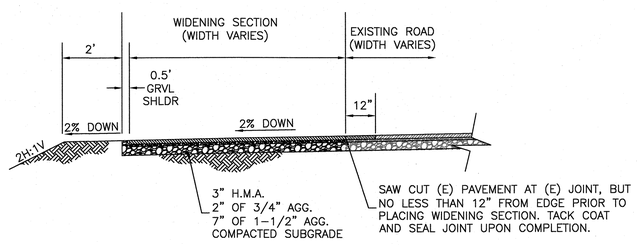
Work Order No.
14122





CORNER WIDENING

SCALE: 1"=10'



TYPICAL CROSS SECTION

SCALE: 1"=2'

ADDITIVE BID ITEM - MARINA/LARCH CORNER WIDENING

Design D.O.E.	Survey T.E.C.
DWG. No. K:\ACAD\14100\14122\14122_Utility.dwg	
Date 7/31/2018	Drawn T.E.C.
Work Order No. 14122	Scale 1"=10'

MARINA/LARCH CORNER WIDENING
FOR THE
WEST HARBOR UTILITIES PROJECT
IN THE BINGEN POINT BUSINESS PARK
BINGEN, KLICKITAT COUNTY, WASHINGTON

TENNESON ENGINEERING CORP.
CONSULTING ENGINEERS
3775 CRATES WAY
THE DALLES, OREGON 97058
PH. 541-296-9177 FAX 541-296-6657

PLOT DATE: 7/31/2018 K:\ACAD\14100\14122\14122_Utility.dwg

PLOT DATE: 7/31/2018

FOR BIDDING

1"
IF THIS BAR IS NOT ONE INCH, THEN ADJUST SCALES ACCORDINGLY

DARRIN O. ECKMAN
STATE OF WASHINGTON
37209
REGISTERED
PROFESSIONAL ENGINEER
EX. DATE: 11/14/19

PLAN

SHEET
C-701

Work Order No.
14122