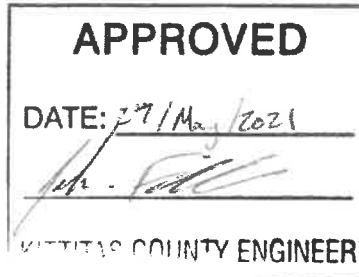


WESTERN PACIFIC ENGINEERING & SURVEY

PIONEER WAY PROFESSIONAL CENTER
1328 E. HUNTER PLACE
MOSES LAKE, WASHINGTON 98837
OFFICE: (509) 765-1023
FAX: (509) 765-1298

April 27, 2021

Cle Elum Piles West LLC
Attn: Chad Bala
P.O. Box 808
Cle Elum, WA 98922



Subject: Roadway Certification for Dapple Grey Way in Kittitas County Washington.
WPES Project Number: 20646

Dear Mr. Bala:

On October 30, 2020 you completed construction of Dapple Grey Way as part of the Palomino Fields Major Plat. I have reviewed the construction and the December 15, 2015 Kittitas County Roadway Standards and have found the following:

Easement Width: Table 4-1, 60' of roadway easement, Tract J, is provided per the Palomino Fields Division 4 plat.

Roadway Width: 26' of asphalt roadway width is provided exceeding the requirements of Table 4-4a for development with 41 or more parcels.

Roadway Surfacing: The roadway is surfaced with 12" of compacted crushed rock and 3" of compacted hot mix asphalt, exceeding the requirements of Table 4-4a.

Roadway Compaction: The compaction of the roadway was done under the supervision of Western Pacific Engineering and Survey. Compaction reports have been included as part of the record. Compaction of the roadway was found to be in conformance with standards.

Drainage: Drainage swales are installed along the roadway perimeter to contain stormwater on site in conformance with Stormwater Management Manual for Eastern Washington and the project plans and specifications.

Maximum Grade: All roadways are below the maximum grade of 10% allowed by Table 4-4a.

Sight Distance: Meets or exceeds the requirements of AASHTO.

Horizontal Curvature: Meets or exceeds the requirements of WSDOT.

Vertical Curvature: Meets or exceeds the requirements of WSDOT.

Access: Dapple Grey Way is access at the north and south ends by the County Road known as Roan Drive.

Speed Limit: The speed limit is not posted at this time

Channelization: Not necessary at this time.

Cut and Fill Slopes: Cut and fill slopes meet or exceed the requirements of Table 4-4a.3

Roadway Maintenance: Roadway maintenance has been address in the Road Maintenance Agreement prepared by James C. Carmody, Meyer, Fluegge & Tenney for the properties fronting Dapple Grey way, including Lots 1/14, Tracts 'E' through 'H' and Tract 'J'.

Having reviewed the construction plans and the roadway construction I find that the roadway, Dapple Grey Way, meets the private roadway standards under Section 12.40.70 through Section 12.40.90 of the Kittitas County Roadway Standards dated December 15, 2015.

If you have any questions or require further assistance in this matter, please feel free to call our office.

Sincerely,



Nathaniel D. Nofziger P.E.
WESTERN PACIFIC ENGINEERING AND SURVEY



VICINITY MAP
(Not To Scale)



APPROVALS
KITTITAS COUNTY DEPARTMENT OF PUBLIC WORKS
EXAMINED AND APPROVED
This day of A.D. 2020
Kittitas County Engineer

HEALTH DEPARTMENT
I HEREBY CERTIFY that the Palomino Fields Plat - Division IV, has been examined by me and I find that the sewage and water system herein shown does meet and comply with all requirements of the County Health Dept.
Dated this Day of A.D. 2020.
Kittitas County Health Officer

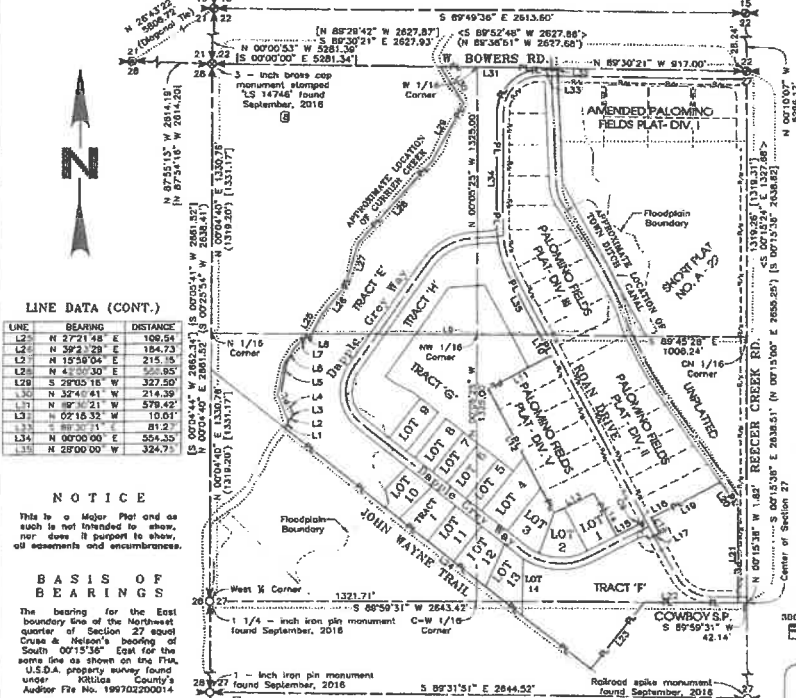
CERTIFICATE OF PLANNING DEPT.
I HEREBY CERTIFY that the Palomino Fields Plat - Division IV, has been examined by me and I find that it conforms to the Comprehensive Plan of the Kittitas County Planning Commission.
Dated this Day of A.D. 2020.
Kittitas County Planning Official

CERTIFICATE OF TREASURER
I HEREBY CERTIFY that the taxes and assessments are paid for the preceding years and for this year in which the plat is now to be filed. Parcels 960974, 961392, & 961393.
Dated this Day of A.D. 2020.
Kittitas County Treasurer

CERTIFICATE OF ASSESSOR
I HEREBY CERTIFY that the Palomino Fields Plat - Division IV, has been examined by me and I find the property to be in an acceptable condition for platting. Parcels 960974, 961392, & 961393.
Dated this Day of A.D. 2020.
Kittitas County Assessor

KITTITAS COUNTY BOARD OF COMMISSIONERS
EXAMINED AND APPROVED this day of A.D. 2020.
BOARD OF COUNTY COMMISSIONERS
By
Chairperson
ATTEST:
Clerk of the Board

PALOMINO FIELDS PLAT - DIVISION IV
A REPLAT OF TRACTS 'B', 'C', AND 'D', PALOMINO FIELDS PLAT - DIVISION IV
A PORTION OF THE S 1/4 OF SECTION 27, TOWNSHIP 18 NORTH, RANGE 18 EAST, W.M.
KITTITAS COUNTY, WASHINGTON



LINE DATA (CONT.)

LINE	BEARING	DISTANCE
L25	N 2721.48° E	100.54
L26	N 392.28° E	154.73
L27	N 1550.04° E	215.35
L28	N 4350.30° E	245.90
L29	S 2905.18° W	327.50
L30	N 324.61° W	214.39
L31	N 87.61° W	379.62
L32	N 0216.32° W	10.61
L33	S 88.30° E	81.27
L34	N 0000.00° E	354.33
L35	N 2800.00° W	324.72

NOTICE
This is a Major Plat and as such is not intended to show, nor does it purport to show, all easements and encumbrances.

BASIS OF BEARINGS
The bearing for the East boundary line of the Northwest quarter of Section 27 above Cruss & Nelson's bearing of South 00°15'36" East for the same line as shown on the Plat, U.S.D.A. property survey found under Kittitas County's Auditor File No. 199702200014

AUDITOR'S CERTIFICATE
Filed for record this day of 2020, at M. in Book of Survey at Page(s) under Auditor's File Number at the request of Western Pacific Engineering & Survey, Inc.
Comptroller Auditor
Deputy County Auditor

SURVEYOR'S CERTIFICATE
I hereby certify that the Palomino Fields Plat - Division IV plat is based on an actual survey and subdivision of Section 27, Township 18 North, Range 18 East, W.M.; that the distances and courses and angles are shown thereon correctly; that the monuments have been set; and lot and block corners staked on the ground.
Frederick C. Skinner, P.E., P.L.S., Washington Land Surveyor No. 12493
WESTERN PACIFIC ENGINEERING AND SURVEY, INC.
Pioneer Way Professional Center
1328 Hunter Place
Moscow, Washington 98637

Receiving No.
LP - ##-####

LINE LEGEND

- Parent Parcel
- Lot Line
- Section Subdivision
- Right-of-Way Centerline
- Surrounding Plat Lot Line
- Assumed Creek Boundary Line
- Dimension Line
- Assumed Centerline of Town Ditch/Canal
- Preveys Plat Right-of-Way Easement
- PL Parent Parcel - Parcel boundary as contained in PROPERTY DESCRIPTION AS RESULT OF SURVEY

LINE DATA

LINE	BEARING	DISTANCE
L1	N 2219.03° E	45.13
L2	N 7859.30° E	10.33
L3	N 1819.03° E	28.02
L4	N 7841.48° W	131.06
L5	N 1024.12° E	131.11
L6	N 1111.12° E	80.18
L7	N 5323.02° E	86.83
L8	N 4423.43° E	132.24
L9	S 8945.28° E	7133.18
L10	S 2800.00° E	117.60
L11	S 6200.00° W	350.00
L12	S 2800.00° E	88.00
L13	N 6200.00° E	218.00
L14	S 2800.00° W	236.95
L15	N 6200.00° E	117.60
L16	S 2800.00° E	110.00
L17	N 8200.00° E	60.00
L18	S 8950.31° W	42.14
L19	N 6200.00° E	381.88
L20	S 3936.20° E	147.15
L21	S 0015.05° E	482.33
L22	S 8930.31° W	458.00
L23	S 3814.18° W	431.13
L24	N 5745.11° W	1825.66

SCALE IN FEET
0 150 0 300 600 900

INSTRUMENT USED
Trimble R10 GPS Receivers
Tromms Closure
Metric Standards Per WAC 332-130-080

INDEXING DATA
527 TERN RIBE

WESTERN PACIFIC ENGINEERING & SURVEY
A TERRA DEVELOPMENT SERVICES CORPORATION
1328 E. Hunter Place, Moscow, Washington
T:(509)765-1023 F:(509)765-1298
Services in Washington and Idaho

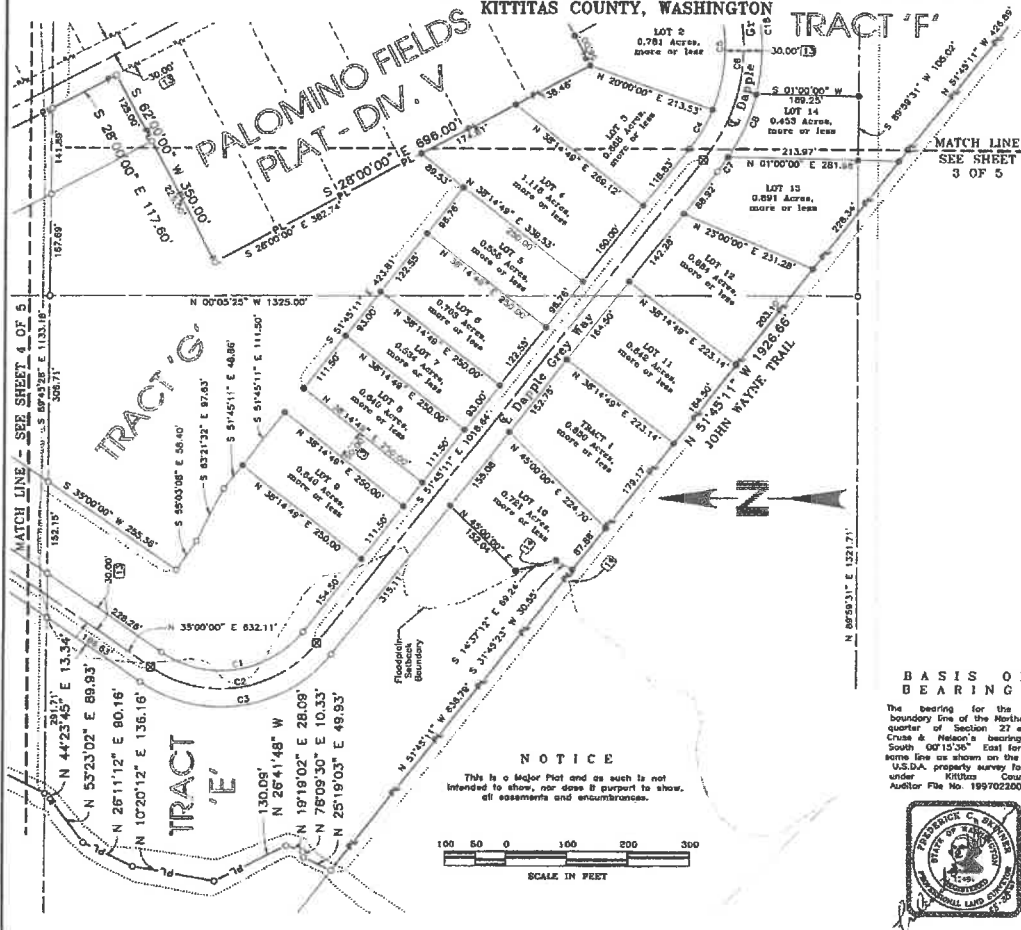
LCU, INC.
Surveyed by LWN Scale 1" = 300'
Drawn by TM/FCJ Sheet 1 of 6
Checked by JCS Project No. 18146

PL - Project Data; © Western Pacific Engineering & Survey, Inc. - Aug. 20, 2020

PALOMINO FIELDS PLAT - DIVISION IV
 A REPLAT OF TRACTS 'B', 'C', AND 'D', PALOMINO FIELDS PLAT - DIVISION IV
 A PORTION OF THE S 1/2 OF THE NW 1/4 OF SECTION 27, TOWNSHIP 18 NORTH, RANGE 18 EAST, W.M.
 KITTITAS COUNTY, WASHINGTON

Receiving No.
 LP - 00-00000

181827



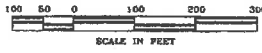
- LEGEND**
- 5/8 - inch iron pin with surveyor's cap marked "LS 12491" monument set 2020
 - ⊙ 3 - inch brass cap monument found September, 2016
 - 5/8 - inch aluminum surveyor's cap monument stamped Kittitas County found September, 2016
 - ⊠ 2 - inch brass cap monument stamped "LS 12491" grouted in a 2-inch pipe set in a monument capse 2020
 - △ 5/8 - inch iron pin with surveyor's cap stamped "12491" monument found September, 2016
 - ▲ 5/8 - inch iron pin with surveyor's cap stamped "18092" monument found September, 2016
 - ⊖ 5/8 - inch iron pin with no surveyor's cap monument found September, 2016
 - 1 - inch iron pin with no surveyor's cap monument found September, 2016
 - Railroad spike monument found September, 2016
 - 5/8 - inch iron pin with surveyor's cap marked "LS 49273" monument set July 11, 2017
 - ▲ 5/8 - inch iron pin with surveyor's cap marked "LS 12491" monument found 2020
 - Calculated point only
 - no monument found or set
 - () Previously recorded information from Preston Short Plat, Short Plat A-23, and shown on drawing as Kittitas Co. Short Plat No. 77-12, as found under Kittitas County's APN 418140
 - [] Previously recorded information from Record of Survey drawing as found under Kittitas County's APN 189702200014
 - < > Previously recorded information from Record of Survey drawing as found under Kittitas County's APN 189702200014
 - | | Previously recorded information from Record of Survey drawing as found under Kittitas County's APN 189702200014
 - | | Previously recorded information from Palomino Fields Plat - Div. II drawing as found under Kittitas County's APN 201905210014
 - < > Previously recorded information from Statutory Nonparty Deed found under Kittitas County's APN 418166
 - ⊠ Note - See PLAT NOTES - Sheet 5 of 5

BASIS OF BEARINGS

The bearing for the East boundary line of the Northeast quarter of Section 27 equal Cruise & Meason's bearing of South 00°12'00" East for the same line as shown on the FMA, U.S.D.A. property survey found under Kittitas County's Auditor File No. 199702200014

NOTICE

This is a Major Plat and as such is not intended to show, nor does it purport to show, all easements and encumbrances.



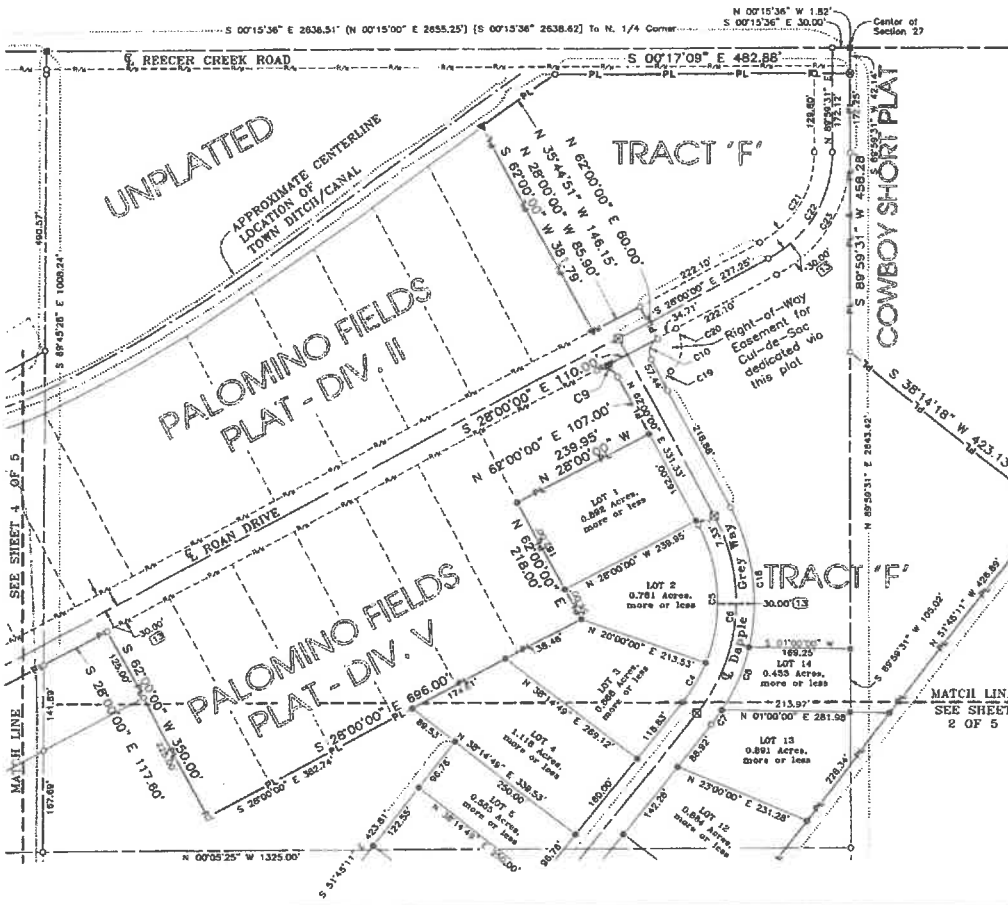
INSTRUMENT USED	INDEXING DATA
Trimble R10 GPS Receiver	527 FISH #18E
WESTERN PACIFIC ENGINEERING & SURVEY A TERRA DEVELOPMENT SERVICES CORPORATION 1328 E. Hunter Place, Moses Lake, Washington TEL: (509) 765-1023 FAX: (509) 765-1289 Services in irrigation and lands	
LCU, INC. Surveyed by LMH Scale 1" = 100' Drawn by Tm/F FCS Sheet 2 of 6 Checked by FCS Project No. 18146	

File: \\wps\proj\18146\18146.dwg Date: 08/28/2018 10:00:00 AM

PALOMINO FIELDS PLAT - DIVISION IV
 A REPLAT OF TRACTS 'B', 'C', AND 'D', PALOMINO FIELDS PLAT - DIVISION IV
 A PORTION OF THE S 1/2 OF THE NW 1/4 OF SECTION 27, TOWNSHIP 18 NORTH, RANGE 18 EAST, W.M.
 KITITITAS COUNTY, WASHINGTON

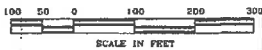
Receiving No.
 LP - ##-####

181827



BASIS OF BEARINGS
 The bearing for the East boundary line of the Northwest quarter of Section 27 equal Cruise & Nelson's bearing of South 07°15'30" East for the same line as shown on the FMA, U.S.D.A. property survey found under Willapa County's Auditor File No. 19972200014

NOTICE
 This is a Major Plat and as such is not intended to show, nor does it purport to show, all encumbrances and easements.



INSTRUMENT USED Trimble R10 GPS Receiver	INDEXING DATA 527 T18N R18E
Traverse Closure Meets Standards Per WAC 332-130-090	

WESTERN PACIFIC ENGINEERING & SURVEY
 A TERRA DEVELOPMENT SERVICES CORPORATION
 1328 E. Hunter Place, Moses Lake, Washington
 T:(509)765-1023 F:(509)765-1298
 Surveys by registration and more.

LCU, INC.
 Surveyed by LWH Scale 1" = 100'
 Drawn by Tm/ FCS Sheet 3 of 5
 Checked by FCS Project No. 18145

Plat or Project Name: S WAPALOMINO DIV. V (PARTIAL) MAP DATE: 05/24/2005

MATCH LINE SEE SHEET 4 OF 5

MATCH LINE SEE SHEET 2 OF 5

PALOMINO FIELDS PLAT - DIVISION IV
 A REPLAT OF TRACTS 'B', 'C', AND 'D', PALOMINO FIELDS PLAT - DIVISION IV
 A PORTION OF THE S 1/2 OF THE NW 1/4 OF SECTION 27, TOWNSHIP 18 NORTH, RANGE 18 EAST, W.M.
 KITTITAS COUNTY, WASHINGTON

Receiving No.
 LP - ##-####

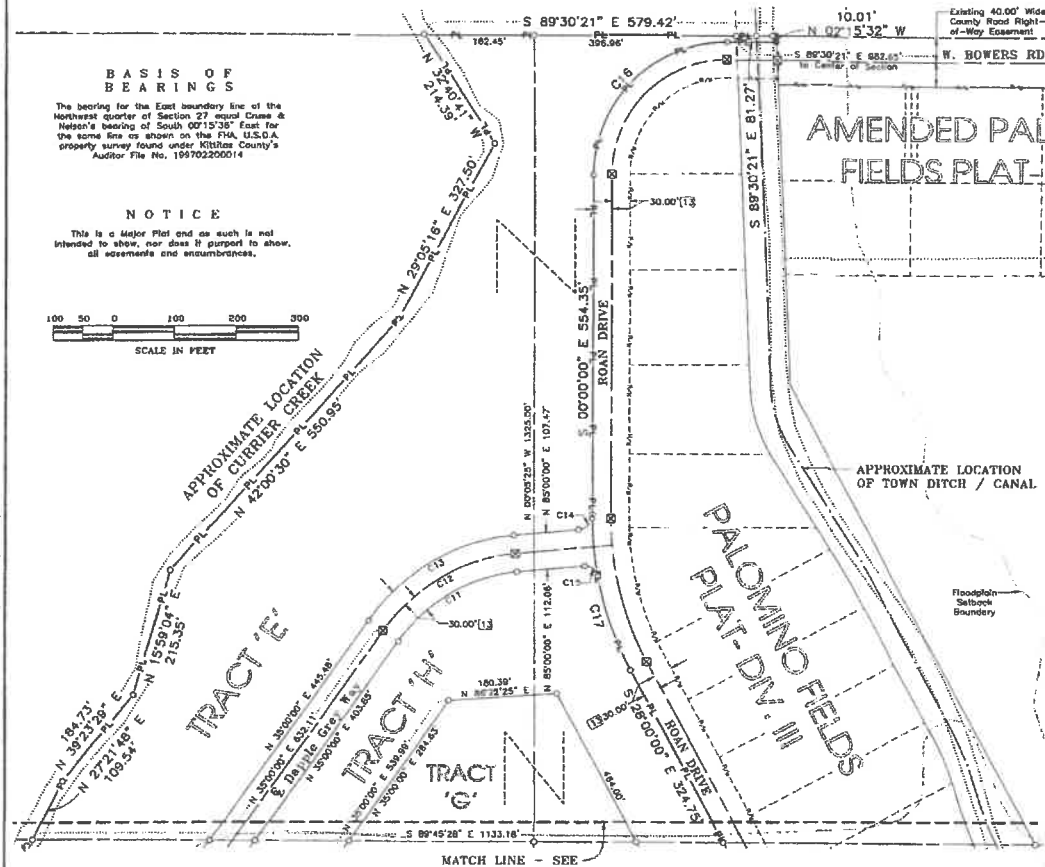
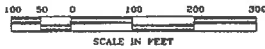
181827

BASIS OF BEARINGS

The bearing for the East boundary line of the Northeast quarter of Section 27 equal Crane & Nelson's bearing of South 00°15'38" East for the same line as shown on the F.M.A. U.S.D.A. property survey found under Kittitas County's Auditor File No. 199702300014

NOTICE

This is a Major Plat and as such is not intended to show, nor does it purport to show, all easements and encumbrances.



INSTRUMENT USED	INDEXING DATA				
Trimble R10 GPS Receivers	<table border="1"> <tr><td>1</td><td>2</td></tr> <tr><td>3</td><td>4</td></tr> </table>	1	2	3	4
1	2				
3	4				
Traverse Closure Meets Standards Per WAC 332-130-090	527 T18N R18E				
WESTERN PACIFIC ENGINEERING & SURVEY A TERRA DEVELOPMENT SERVICES CORPORATION 1328 E. Hunter Place, Moses Lake, Washington T:(509)765-1023 F:(509)765-1288 Services in Washington and Idaho					
LCU, INC. Surveyed by LKH Scale 1" = 100' Drawn by Tom/PCS Sheet 4 of 6 Checked by PCS Project No. 18146					

MATCH LINE - SEE SHEETS 2 & 3 OF 5

Plat No. 181827, Filed for Record in Kittitas County, Washington, on August 24, 2022.

PALOMINO FIELDS PLAT - DIVISION IV
 A REPLAT OF TRACTS 'B', 'C', AND 'D', PALOMINO FIELDS PLAT - DIVISION IV
 A PORTION OF THE S 1/2 OF THE NW 1/4 OF SECTION 27, TOWNSHIP 18 NORTH, RANGE 18 EAST, W.M.
 KITTITAS COUNTY, WASHINGTON

Receiving No.
 LP - ##-####

181827

ORIGINAL PROPERTY DESCRIPTION

Tract 'B', Tract 'C', and Tract 'D' of the Palomino Fields Plat - Division IV as recorded in Book 22 of Plats, Pages 23 through 26, as recorded under the Kittitas County Auditor's File Number 418140.

GENERAL NOTES

- As per RCW 17.10.140, landowners are responsible for controlling and preventing the spread of noxious weeds. Accordingly, the Kittitas County Noxious Weed Board recommends immediate reseeding of areas disturbed by development to preclude the proliferation of noxious weeds.
- Construction of access improvements will require obtaining an access permit from the Department of Public Works. All access improvements shall be completed in accordance with current Kittitas County Road standards prior to issuance of a building occupancy permit for any proposed lots.
- Maintenance of the access is the responsibility of the property owners who benefit from its use.
- An approved access permit will be required from the Department of Public Works prior to creating any new driveway access or performing work within the county right-of-way easement.
- Any further subdivision of lot to be served by the proposed access may result in further access requirement. See Kittitas County Road Standards.
- A public utility easement ten feet (10.00') in width is reserved along all lot lines. The ten foot (10.00') easement shall abut the exterior plat boundary and shall be divided five feet (5.00') on each side of the interior lot lines. Said easement shall also be used for irrigation.

WATER NOTES

On February 8, 2017 Chicago Title and Ellensburg Water Company were contacted to find any information regarding the location and ownership of the "Town Ditch". At that time both entities were unable to provide any information to said ditch. The Ellensburg Water Company believes there is at least a prescriptive easement for said ditch but we do not have any documentation to prove this or even define said ditch other than the surveyed location shown on this survey.

SURVEYOR'S NARRATIVE

- Historically two different locations of the north quarter corner of Section 27 Township 18 North, Range 18 East, W.M. have been used. In 1977 via the short plat recorded under Kittitas Co. Auditor's File Number 418140, a monument was set. Subsequently the monument was removed possibly due to road reconstruction. In 1991 via the survey recorded under Kittitas Co. Auditor's File Number 529177, a nail and washer was set with a note that Kittitas Co. Public Works will set a monument in a monument case with future road maintenance in the vicinity. The location of these two monuments differ by 28.24 feet.
- The 3-inch brass cap monument found at the intersection of Reecer Creek Road and Bowers Road was held to establish the north boundary of the northwest quarter of said section 27. By holding this monument property on the north side of this line had the fewest apparent negative impacts, while the property immediately on the south side absorbed all the decrease in size. In addition, most performed subsequent to 1991 have relied on this monument as the location of the north quarter corner.
- However, the 1977 monument location was held for the purpose of locating the following three parcels:
 Kittitas Co. Short Plat No. A-22 recorded under AFN 418140
 Tract 1 of Statutory Warranty Deed recorded under AFN 201410160051
 Tract 2 of Statutory Warranty Deed recorded under AFN 201410160051
 In addition, other monuments and fence lines were used to help confirm the boundaries of said Short Plat.
- The west quarter corner of Section 27 recorded on said Auditor's File Number 418140 was calculated. However, on an adjacent survey to west, a 1-1/4 inch iron pipe was found and said 1-1/4 inch iron pipe was found and accepted as said west quarter corner.
- The county road right of way for Reecer Creek Road has been defined differently by various plats along Reecer Creek Road. After contacting Kittitas County and doing independent records research we found no specific description of said right of way other than the previously recorded plats. Therefore with no other evidence, for this survey, the centerline of the county road known as Reecer Creek was defined in the northeast quarter of the northwest quarter of said Section 27 as coincident with the east boundary of the northwest quarter of said section. The said centerline matches that of said Auditor's File Number 418140.
- The remaining exterior property boundary lines are identified on Sheet 1 of 3 as per the property description contained herein. However, the owner of said property owns additional adjoining property in this general

PLAT NOTES

- Existing thirty-foot (30.00') wide Kittitas County Road Right-of-Way.
- The short plat name is shown on top of the short plat developed by Mr. Leroy J. Preston in November, 1977, to be "KITTITAS CO. SHORT PLAT NO. 77-12", but the County refers to this new short plat as "SHORT PLAT A-22". Said plat is filed under the Kittitas County Auditor's File Number as 418140.
- A fifty-foot (50.00') wide access strip - a part of Tract 'D'.
- Not Used
- Not Used
- Found a 5/8-inch iron pin N 17°22'22" E a distance of 0.78' from the calculated position of the property corner.
- Found a 5/8-inch iron pin without surveyor's cap south a distance of 0.3' from the calculated position of the property line.
- Lead Corner Record for Section Corner is filed with the Kittitas County Auditor's Office under the Auditor's File Number 536434.
- Lead Corner Record for Section Corner is filed with the Kittitas County Auditor's Office under the Auditor's File Number 199912150012.
- Lead Corner Record for Section Corner is filed with the Kittitas County Auditor's Office under the Auditor's File Number 199912150013.
- A thirty-foot (30.00') wide County Road Right-of-Way Easement dedicated via Palomino Field Plat - Division IV as recorded.
- County Road Right-of-Way as detailed on the Record of Survey drawing filed in Book 22 of Surveys, Page 174, Kittitas County Auditor's File No. 199702200012
- Thirty-foot (30.00') wide Right-of-Way Easement dedicated to Kittitas County for road proposed via this plat.
- Flood Plain set-back line.

NOTICE

This is a Major Plat and as such is not intended to show, nor does it purport to show, all easements and encumbrances.

This survey was prepared for the exclusive use of the person, persons, or entity named in the Surveyor's Certificate hereon. Said certificate does not extend to any unnamed person without an expressed authorization by the Surveyor naming said person.



INSTRUMENT USED	INDEXING DATA
Trimble R10 GPS Receiver Trapeze Closure Heads Standards Per WAC 532-130-090	 527 T18N R18E
 WESTERN PACIFIC ENGINEERING & SURVEY A TERRA DEVELOPMENT SERVICES CORPORATION 1328 E. Hunter Place, Moses Lake, Washington T: (509) 765-1023 F: (509) 765-1299 E: wps@western-pacific.com	
LCU, INC. Surveyed by LWH Scale 1" = 400' Drawn by Jml/FCS Sheet 3 of 4 Checked by FCS Project No. 181845	

This is a Major Plat and as such is not intended to show, nor does it purport to show, all easements and encumbrances.

PALOMINO FIELDS PLAT - DIVISION IV

A REPLAT OF TRACTS 'B', 'C', AND 'D', PALOMINO FIELDS PLAT - DIVISION IV

A PORTION OF THE S ½ OF THE NW ¼ OF SECTION 27, TOWNSHIP 16 NORTH, RANGE 18 EAST, W.M. KITITITAS COUNTY, WASHINGTON

Receiving No.
LP - ##-####

181827

DEDICATIONS

DEDICATION KNOW ALL MEN by these presents, CLE ELUM PINES WEST, LLC, a Washington Limited Liability Company, do hereby declare this plat and dedicate to the public forever all roads and ways hereon with the right to make all necessary slopes for cuts and fills, and the right to continue to drain said roads and ways over and across any lot or lots, where water might take a natural course, in the original reasonable grading of the roads and ways shown hereon. Following original reasonable grading of roads and ways hereon no drainage water on any lot or lots shall be diverted or blocked from their natural course so as to discharge upon any public road rights-of-way, or to hamper proper road drainage. Any enclosing of drainage waters in culverts or drains or rerouting thereof across any lot as may be undertaken by or for the owner of any lot, shall be done by and at the expense of such owner.

IN WITNESS WHEREOF, we have hereunto set our hands and seal this _____ day of _____, A.D., 2020, CLE ELUM PINE WEST, LLC, a Washington Limited Liability Company

President
CLE ELUM PINES WEST, LLC

CURVE DATA

CURVE #	RADIUS	DELTA	ARC	TANGENT	CHORD	BEARING	CHORD
C1	175.00	86°45'11"	257.40	180.63	S 08°23'35" E	233.51	
C2	200.00	86°45'11"	302.83	188.98	S 08°22'25" E	274.73	
C3	130.00	86°22'47"	346.79	215.91	S 08°33'47" E	314.43	
C4	270.00	16°04'37"	73.75	28.12	S 59°43'25" E	75.50	
C5	270.00	50°10'22"	236.43	128.40	N 87°05'11" E	222.89	
C6	300.00	86°14'49"	344.87	185.74	S 8°25'36" E	327.87	
C7	130.00	5°08'26"	28.61	14.81	S 54°10'24" E	29.60	
C8	330.00	18°41'24"	113.98	57.39	S 66°47'19" E	111.46	
C9	25.00	90°00'00"	39.27	25.00	S 17°00'00" W	31.36	
C10	25.00	90°00'00"	39.27	25.00	N 73°00'00" W	35.38	
C11	700.00	50°00'00"	735.07	425.90	N 89°00'00" E	728.21	
C12	300.00	50°00'00"	291.60	139.49	N 60°00'00" E	283.57	
C13	330.00	50°00'00"	297.98	153.88	N 60°00'00" E	278.93	
C14	45.00	89°00'00"	37.09	22.91	S 42°30'00" W	33.78	
C15	20.00	84°47'15"	33.88	17.28	S 32°51'29" E	28.97	
C16	211.04	80°29'38"	342.79	218.62	S 45°14'49" W	308.28	
C17	530.00	15°18'00"	141.59	71.20	S 17°32'01" E	141.13	
C18	330.00	41°18'00"	222.87	124.42	S 82°38'20" W	232.84	
C19	23.00	75°38'37"	35.93	19.35	S 89°15'42" E	36.80	
C20	53.00	89°41'34"	72.48	46.72	S 82°52'10" E	71.21	
C21	170.00	81°00'29"	183.95	102.18	S 59°00'14" E	175.13	
C22	200.00	82°00'29"	216.45	120.18	S 59°00'14" E	208.94	
C23	250.00	62°00'29"	248.72	138.22	S 58°30'14" E	236.13	

ACKNOWLEDGEMENTS

STATE OF WASHINGTON)
COUNTY OF _____) SS

On this day _____ of _____, A.D., 2020, before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared and to me known to be the president of CLE ELUM PINE WEST, LLC, and acknowledged the said instrument to be the free and voluntary act and deed of Said Corporation, for the uses and purposes therein mentioned, and on oath stated that he (she) was authorized to execute the said instrument and that the seal affixed is the corporate seal of Said Corporation.

WITNESS my hand and official seal the day and year first written.
Notary Public in and for the State of Washington.

residing at _____

STATE OF WASHINGTON)
COUNTY OF _____) SS

On this day _____ of _____, A.D., 2020, before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared and to me known to be the president of CLE ELUM PINE EAST, LLC, and acknowledged the said instrument to be the free and voluntary act and deed of Said Corporation, for the uses and purposes therein mentioned, and on oath stated that he (she) was authorized to execute the said instrument and that the seal affixed is the corporate seal of Said Corporation.

WITNESS my hand and official seal the day and year first written.
Notary Public in and for the State of Washington.

residing at _____

NOTICE

This is a Major Plat and as such is not intended to show, nor does it purport to show, all easements and encumbrances.
This survey was prepared for the exclusive use of the person, persons, or entity named in the Surveyor's Certificate hereon. Said certificate does not extend to any unnamed person without an expressed reclassification by the Surveyor naming said person.

DEDICATION KNOW ALL MEN by these presents, CLE ELUM PINES EAST, LLC, a Washington Limited Liability Company, do hereby declare this plat and dedicate to the public forever all roads and ways hereon with the right to make all necessary slopes for cuts and fills, and the right to continue to drain said roads and ways over and across any lot or lots, where water might take a natural course, in the original reasonable grading of the roads and ways shown hereon. Following original reasonable grading of roads and ways hereon no drainage water on any lot or lots shall be diverted or blocked from their natural course so as to discharge upon any public road rights-of-way, or to hamper proper road drainage. Any enclosing of drainage waters in culverts or drains or rerouting thereof across any lot as may be undertaken by or for the owner of any lot, shall be done by and at the expense of such owner.

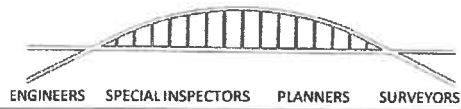
IN WITNESS WHEREOF, we have hereunto set our hands and seal this _____ day of _____, A.D., 2020, CLE ELUM PINE EAST, LLC, a Washington Limited Liability Company

President
CLE ELUM PINES EAST, LLC

<p>INSTRUMENT USED</p> <ul style="list-style-type: none"> Trimble R10 GPS Receivers Traverse Closure Master Standards Par WAC 332-130-090 	<p>INDEXING DATA</p> <table border="1" style="width: 100%; height: 40px;"> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </table> <p>527 T16N R18E</p>																									
<p>WESTERN PACIFIC ENGINEERING & SURVEY</p> <p>A TERRA DEVELOPMENT SERVICES CORPORATION 1328 E. Hunter Place, Moses Lake, Washington T: (509) 765-1025 F: (509) 765-1288 <small>Members in Washington and Idaho</small></p>																										
<p>LCU, INC.</p> <p>Surveyed by LUN Scale 1" = N/A Drawn by Tm/JCS Sheet 4 of 6 Checked by FCS Project No. 18146</p>																										



File as Project Desc: E:\V\18146\18146.dwg; Plotfile - Aug 28, 2020



WESTERN PACIFIC ENGINEERING & SURVEY
PIONEER WAY PROFESSIONAL CENTER
1328 E. HUNTER PLACE
MOSES LAKE, WASHINGTON 98837
OFFICE: (509) 765-1023
FAX: (509) 765-1298

August 19th, 2020

PROJECT NO: 20646
REPORT NO: 01

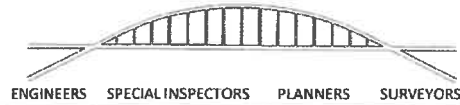
LCU
Attn: Pat Deneen
PO BOX 808
Cle Elum, WA. 98922

PROJECT: Palomino Plat, Dapple Gray Way Improvements
INSPECTION: Soil and Compaction Inspection

On August 19th, 2020, Western Pacific Engineering and Survey was on site to verify the compaction of the fill material placed as subgrade on Dapple Gray Way. Due to the amount of large cobble size on the material being about 50% by weight, a proctor did not seem feasible. Verification of compaction was achieved by the method of probing. Compaction was verified approximately from Sta. 54+00 to Sta. 75+00.

While probing, the material felt very dense and was unable to penetrate the soils with just body weight alone. For additional verification a pin was driven into the subgrade. While pounding the pin into the ground the material felt very dense and unyielding. It seemed that proper compaction efforts were employed by the contractor to achieve proper compaction.

Respectfully Submitted By: David Dekker



WESTERN PACIFIC ENGINEERING & SURVEY

PIONEER WAY PROFESSIONAL CENTER
1328 E. HUNTER PLACE
MOSES LAKE, WASHINGTON 98837
OFFICE: (509) 765-1023
FAX: (509) 765-1298

August 24th, 2020

PROJECT NO: 20646

REPORT NO: 02

LCU

Attn: Pat Deneen

PO BOX 808

Cle Elum, WA. 98922

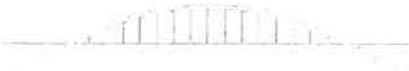
PROJECT: Palomino Plat, Dapple Gray Way Improvements

INSPECTION: Soil and Compaction Inspection

On August 24th, 2020, Western Pacific Engineering and Survey was on site to verify the compaction of the fill material placed as subgrade on the Dapple Gray Way intersections. Due to the amount of large cobble size on the material being about 50% by weight, a proctor did not seem feasible. Verification of compaction was achieved by the method of probing. Compaction was verified approximately from Sta. 76+00 to Sta. 80+25.

While probing, the material felt very dense and the probe was unable to penetrate the soils with just body weight alone. For additional verification a pin was driven into the subgrade. While pounding the pin into the ground the material felt very dense and unyielding. It seemed that proper compaction efforts were employed by the contractor to achieve proper compaction.

Respectfully Submitted By: David Dekker



WESTERN PACIFIC ENGINEERING & SURVEY

1328 E. Hunter Place, Moses Lake, Washington
T: (509)765-1023 F: (509)765-1298



Soil Compaction Test Report

Report To: LCU
Attn: Pat Deneen
PO Box 808
Cle Elum, WA 98922

Date: 9/1/20
Project #: 20646
Report #: 03

Project Name: Palomino Plat, Dapple Gray Way Improvements
Contractor: Advantage Dirt Construction
Weather: Sunny / Clear
Air Temp. °F: 80
Fill Placement General Location : Dapple Gray Way
Technician: David Dekker
Test Date: 8/25/20
Nuclear Gauge #: #0054: M370703787 Density Standard: 29312
Moisture Standard: 9088

Moisture-Density Relationship Curve

Proctor Sample ID	Proctor Method	Max Dry Density (pcf)	Optimum Moisture %	Soil Description
MD20646 149	ASTM D1557	141	7.7	Base Course

Summarized below are the results of field density tests performed by Western Pacific Engineering and Survey (WPES), on the above referenced project. These test results relate only to the items tested at the location tested. This report shall not be reproduced, except in full, without the prior written approval of WPES. Unless otherwise noted, our technicians utilized the Nuclear Densometer Method of testing in accordance with ASTM D6938.

Project Specifications

Specified Moisture % Range: N/A
Specified % Compaction: 95

Retest? A Retest is Needed

Test No.	Field Test Location	Elevation	Dry Density (pcf)	Moisture Content (%)	Max Dry Density (pcf)	Optimum Moisture (%)	Percent Compaction (%)	Probe Depth (in)
1	Approx. 5' Right of CL at Sta. 53+41	Top of Base Course	135.5	10.70	141.0	7.7	96.1	6"
2	Approx. 6' Left of CL at Sta. 55+00	Top of Base Course	135.2	7.60	141.0	7.7	95.9	6"
3	Approx. 5' Right of CL at Sta. 61+50	Top of Base Course	136.1	8.00	141.0	7.7	96.5	6"

Remarks:

A retest is needed for the areas of the road that need to be worked more.

WESTERN PACIFIC ENGINEERING & SURVEY

1328 E. Hunter Place, Moses Lake, Washington
T: (509)765-1023 F: (509)765-1298



Soil Compaction Test Report

Report To: LCU
Attn: Pat Deneen
PO Box 808
Cle Elum, WA 98922

Date: 9/1/2020
Project #: 20646
Report #: 04

Project Name: Palomino Plat, Dapple Gray Way Improvements
Contractor: Advantage Dirt Construction
Fill Placement General Location : Roadway
Technician: Matthew Maygren
Nuclear Gauge #: #0055: M351002911 **Density Standard:** 27000 **Moisture Standard:** 10912

Weather: Sunny and Clear
Air Temp. °F: 63
Test Date: 8/31/2020

Moisture-Density Relationship Curve

Proctor Sample ID	Proctor Method	Max Dry Density (pcf)	Optimum Moisture %	Soil Description
MD20646 149	ASTM D1557	141	7.7	Base Course
MD20646 150	ASTM D1557	130.2	9.8	Top Course

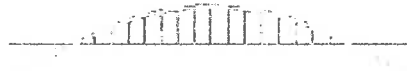
Summarized below are the results of field density tests performed by Western Pacific Engineering and Survey (WPES), on the above referenced project. These test results relate only to the items tested at the location tested. This report shall not be reproduced, except in full, without the prior written approval of WPES. Unless otherwise noted, our technicians utilized the Nuclear Densometer Method of testing in accordance with ASTM D6938.

Project Specifications

Retest? No Retest Needed

Specified Moisture % Range: N/A
Specified % Compaction: 95

Test No.	Field Test Location	Elevation	Dry Density (pcf)	Moisture Content (%)	Max Dry Density (pcf)	Optimum Moisture (%)	Percent Compaction (%)	Probe Depth (in)
1	Approx. 4ft. L of CL @ Sta. 56+73	Top of Base Course Subgrade	136.4	8.70	141.0	7.7	96.7	6
2	Approx. CL @ Sta. 59+20	Top of Base Course Subgrade	134.0	6.40	141.0	7.7	95.0	6
3	Approx. 6ft. L of CL @ Sta. 60+70	Top of Base Course Subgrade	135.9	8.50	141.0	7.7	96.4	6
4	Approx. 4ft. L of CL @ Sta. 62+20	Top of Base Course Subgrade	133.7	8.10	141.0	7.7	94.8	6
5	Approx. 6ft. L of CL @ Sta. 63+70	Top of Base Course Subgrade	136.2	6.60	141.0	7.7	96.6	6
6	Approx. 6ft. L of CL @ Sta. 65+20	Top of Base Course Subgrade	134.3	6.90	141.0	7.7	95.2	6



WESTERN PACIFIC ENGINEERING & SURVEY

1328 E. Hunter Place, Moses Lake, Washington
 T: (509)765-1023 F: (509)765-1298

7	Approx. 7ft. L of CL @ Sta. 66+70	Top of Base Course Subgrade	137.0	8.00	141.0	7.7	97.2	6
8	Approx. 8ft. L of CL @ Sta. 68+20	Top of Base Course Subgrade	136.4	7.40	141.0	7.7	96.7	6
9	Approx. 8ft. L fo CL @ Sta. 69+70	Top of Base Course Subgrade	137.1	6.10	141.0	7.7	97.2	6
10	Approx. 11ft. L of CL @ Sta. 71+20	Top of Base Course Subgrade	135.7	8.40	141.0	7.7	96.2	6
11	Approx. 5ft. L of CL @ Sta. 72+70	Top of Base Course Subgrade	136.6	8.00	141.0	7.7	96.9	6
12	Approx. 8ft. L of CL @ Sta. 74+20	Top of Base Course Subgrade	133.6	8.90	141.0	7.7	94.8	6
13	Approx. 10ft. L of CL @ Sta. 75+70	Top of Base Course Subgrade	134.2	8.00	141.0	7.7	95.2	5
14	Approx. 8ft. L of CL @ Sta. 77+20	Top of Base Course Subgrade	136.5	8.20	141.0	7.7	96.8	6
15	Approx. 5ft. L of CL @ Sta. 79+00	Top of Base Course Subgrade	136.2	11.60	141.0	7.7	96.6	6
16	Approx. 7ft. R of CL @ Sta. 53+40	Top of Top Course Subgrade	124.2	10.50	130.2	9.8	95.4	4

Remarks:

None

Deviations: No



WESTERN PACIFIC ENGINEERING & SURVEY

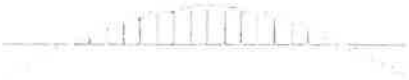
1328 E. Hunter Place, Moses Lake, Washington
T: (509)765-1023 F: (509)765-1298



Performing Standard Counts near Dapple Gray Way Rd. and Roan Dr. Southern Intersection.



Performing Density testing of Base Course Subgrade on Dapple Gray Way Rd. (Ref. Test #1 above)



WESTERN PACIFIC ENGINEERING & SURVEY

1328 E. Hunter Place, Moses Lake, Washington
T: (509)765-1023 F: (509)765-1298



Compaction applied via Drum Roller near Dapple Gray Way and Roan Rd. Southern Intersection.

Soil Compaction Test Report

Report To: LCU
Attn: Pat Deneen
 PO Box 808
 Cle Elum, WA 98922

Date: 9/8/2020
Project #: 20646
Report #: 05

Project Name: Palomino Plat, Dapple Gray Way Improvements
Contractor: Advantage Dirt Construction
Weather: Sunny and Clear
Fill Placement General Location : Roadway
Technician: Matthew Maygren
Air Temp. °F: 70
Nuclear Gauge #: #0055: M351002911 **Density Standard:** 26944
Moisture Standard: 10944
Test Date: 9/2/2020

Moisture-Density Relationship Curve

Proctor Sample ID	Proctor Method	Max Dry Density (pcf)	Optimum Moisture %	Soil Description
MD20646 149	ASTM D1557	130.2	9.8	Top Course
MD20646 150	ASTM D1557	141	7.7	Base Course

Summarized below are the results of field density tests performed by Western Pacific Engineering and Survey (WPES), on the above referenced project. These test results relate only to the items tested at the location tested. This report shall not be reproduced, except in full, without the prior written approval of WPES. Unless otherwise noted, our technicians utilized the Nuclear Densometer Method of testing in accordance with ASTM D6938.

Project Specifications

Retest? No Retest Needed

Specified Moisture % Range: N/A
 Specified % Compaction: 95

Test No.	Field Test Location	Elevation	Dry Density (pcf)	Moisture Content (%)	Max Dry Density (pcf)	Optimum Moisture (%)	Percent Compaction (%)	Probe Depth (in)
1	Approx. 2ft. L of CL @ Sta. 54+90	Top of Top Course Subgrade	127.5	7.50	130.2	9.8	97.9	4
2	Approx. 7ft. R of CL @ Sta. 56+40	Top of Top Course Subgrade	126.8	7.80	130.2	9.8	97.4	4
3	Approx. 7ft. L of CL @ Sta. 57+90	Top of Top Course Subgrade	125.7	9.50	130.2	9.8	96.5	4
4	Approx. 9ft. L of CL @ Sta. 59+40	Top of Top Course Subgrade	128.4	7.10	130.2	9.8	98.6	4
5	Approx. 5ft. R of CL @ Sta. 60+90	Top of Top Course Subgrade	129.2	7.90	130.2	9.8	99.2	4
6	Approx. 5ft. L of CL @ Sta. 62+40	Top of Top Course Subgrade	129.4	9.10	130.2	9.8	99.4	4



WESTERN PACIFIC ENGINEERING & SURVEY

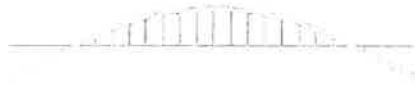
1328 E. Hunter Place, Moses Lake, Washington
T: (509)765-1023 F: (509)765-1298

7	Approx. 3ft. R of CL @ Sta. 63+90	Top of Top Course Subgrade	125.7	9.30	130.2	9.8	96.5	4
8	Approx. 10ft. L of CL @ Sta. 65+40	Top of Top Course Subgrade	126.6	6.90	130.2	9.8	97.2	4
9	Approx. 10ft. R of CL @ Sta. 66+90	Top of Top Course Subgrade	126.4	6.90	130.2	9.8	97.1	4
10	Approx. 8ft. L of CL @ Sta. 68+40	Top of Top Course Subgrade	127.1	9.10	130.2	9.8	97.6	4
11	Approx. 3ft. R of CL @ Sta. 69+90	Top of Top Course Subgrade	126.9	8.70	130.2	9.8	97.5	4
12	Approx. 6ft. L of CL @ Sta. 71+40	Top of Top Course Subgrade	125.7	8.90	130.2	9.8	96.5	4
13	Approx. 2ft. R of CL @ Sta. 72+90	Top of Top Course Subgrade	126.8	9.40	130.2	9.8	97.4	4
14	Approx. 6ft. L of CL @ Sta. 74+40	Top of Top Course Subgrade	126.7	7.20	130.2	9.8	97.3	4
15	Approx. 5ft. R of CL @ Sta. 75+90	Top of Top Course Subgrade	128.0	8.10	130.2	9.8	98.3	4
16	Approx. 1ft. L of CL @ Sta. 77+40	Top of Top Course Subgrade	123.6	7.80	130.2	9.8	94.9	4
17	Approx. 6ft. R of CL @ Sta. 50+50	Top of Base Course Subgrade	134.1	8.70	141.0	7.7	95.1	6
18	Approx. 4ft. R of CL @ Sta. 52+00	Top of Base Course Subgrade	135.3	10.00	141.0	7.7	96.0	6
19	Approx. 3ft. R of CL @ Sta. 50+65	Top of Top Course Subgrade	126.7	9.40	130.2	9.8	97.3	4
20	Approx. 7ft. L of CL @ Sta. 52+10	Top of Top Course Subgrade	123.7	13.00	130.2	9.8	95.0	4

Remarks:

None

Deviations: No



WESTERN PACIFIC ENGINEERING & SURVEY

1328 E. Hunter Place, Moses Lake, Washington
T: (509)765-1023 F: (509)765-1298



Performing Standard Counts on Dapple Gray Way and Roan Rd Northern Intersection.

WESTERN PACIFIC ENGINEERING & SURVEY

1328 E. Hunter Place, Moses Lake, Washington
T: (509)765-1023 F: (509)765-1298



Soil Compaction Test Report

Report To: LCU
Attn: Pat Deneen
PO Box 808
Cle Elum, WA 98922

Date: 9/16/20
Project #: 20646
Report #: 06

Project Name: Palomino Major Plat, Phase 4
Contractor: Advantage Dirt Contractors
Fill Placement General Location : Dapple Gray Way Cul-de-Sac at about Sta. 80+20
Technician: Julio Gonzalez
Nuclear Gauge #: #0055: M351002911 Density Standard: 27080 Moisture Standard: 11008

Weather: Clear
Air Temp. °F: 54
Test Date: 9/10/20

Moisture-Density Relationship Curve

Proctor Sample ID	Proctor Method	Max Dry Density (pcf)	Optimum Moisture %	Soil Description
MD20646 150	ASTM D1557	141	7.7	Base Course

Summarized below are the results of field density tests performed by Western Pacific Engineering and Survey (WPES), on the above referenced project. These test results relate only to the items tested at the location tested. This report shall not be reproduced, except in full, without the prior written approval of WPES. Unless otherwise noted, our technicians utilized the Nuclear Densometer Method of testing in accordance with ASTM D6938.

Project Specifications

Retest? No Retest Needed

Specified Moisture % Range: n/a
Specified % Compaction: 95

Test No.	Field Test Location	Elevation	Dry Density (pcf)	Moisture Content (%)	Max Dry Density (pcf)	Optimum Moisture (%)	Percent Compaction (%)	Probe Depth (in)
1	About 55' right of at Sta. 70+90	Top of base course	134.0	9.70	141.0	7.7	95.0	5
2	About 55' right of at Sta. 80+25	Top of base course	133.9	10.40	141.0	7.7	95.0	4

Remarks:

None

Deviations: No

WESTERN PACIFIC ENGINEERING & SURVEY

1328 E. Hunter Place, Moses Lake, Washington
T: (509)765-1023 F: (509)765-1298



Soil Compaction Test Report

Report To: LCU
Attn: Pat Deneen
PO Box 808
Cle Elum, WA 98922

Date: 9/23/2020
Project #: 20646
Report #: 07

Project Name: Palomino Plat, Dapple Gray Way Improvements
Contractor: Advantage Dirt Construction
Fill Placement General Location : Roadway
Technician: Matthew Maygren
Nuclear Gauge #: #0055: M351002911 Density Standard: 27064
Weather: Partly Cloudy
Air Temp. °F: 52
Test Date: 9/21/2020
Moisture Standard: 10736

Moisture-Density Relationship Curve

Proctor Sample ID	Proctor Method	Max Dry Density (pcf)	Optimum Moisture %	Soil Description
MD20646 149	ASTM D1557	130.2	9.8	Top Course

Summarized below are the results of field density tests performed by Western Pacific Engineering and Survey (WPES), on the above referenced project. These test results relate only to the items tested at the location tested. This report shall not be reproduced, except in full, without the prior written approval of WPES. Unless otherwise noted, our technicians utilized the Nuclear Densometer Method of testing in accordance with ASTM D6938.

Project Specifications

Specified Moisture % Range: N/A
Specified % Compaction: 95

Retest? No Retest Needed

Test No.	Field Test Location	Elevation	Dry Density (pcf)	Moisture Content (%)	Max Dry Density (pcf)	Optimum Moisture (%)	Percent Compaction (%)	Probe Depth (in)
1	Approx. 56ft. R of CL @ Sta. 80+00	Top of Top Course Subgrade	126.6	6.50	130.2	9.8	97.2	4
2	Approx. 12ft. R of CL @ Sta. 79+80	Top of Top Course Subgrade	126.9	6.80	130.2	9.8	97.5	4

Remarks:

None

Deviations: No



WESTERN PACIFIC ENGINEERING & SURVEY

1328 E. Hunter Place, Moses Lake, Washington
T: (509)765-1023 F: (509)765-1298



Performing Standard Counts @ Southern Dapple Gray Way Cul De Sac.



Baer Testing Inc.

1106 Ledwith Ave.
Yakima, WA 98902
(509) 469-3068 Office
(509) 469-3070 Fax

CLIENT: Central Paving, LLC	PROJECT NUMBER: 18-159
PROJECT: Palomino Plat	WORK ORDER #: 20-1818
TRUCK / TONS: Ticket: 4028177, 959.26 Tons	SAMPLE NUMBER: 20-1818-1
DATE SAMPLED: 9/21/2020	DATE TESTED: 9/22/2020
ASPHALT TYPE: 1/2" HMA - Granite Ellensburg	TESTED BY: AJD

Sampled in Accordance with ASTM D 979 unless otherwise noted.

**MECHANICAL ANALYSIS OF EXTRACTED AGGREGATE
ASTM D 5444**

**MAXIMUM THEORETICAL SPECIFIC GRAVITY
ASTM D 2041**

Sieve Size:	Percent Passing:	JMF:	Spec:
1"			
3/4"	100%		99-100
5/8"			
1/2"	95%		90-100
3/8"	85%		90 Max
1/4"			
#4	54%		
#8	36%		28-58
#16	27%		
#30	19%		
#50	13%		
#100	11%		2.0-7.0
#200	6.9%		

Max. Specific Gravity:	2.538
Max. Density:	158.0
Sample Size:	2511.4
Type of Procedure:	Weight in Air
Type of Container:	Type E
Number of Samples:	1

**ASPHALT EXTRACTION
ASTM D 6307**

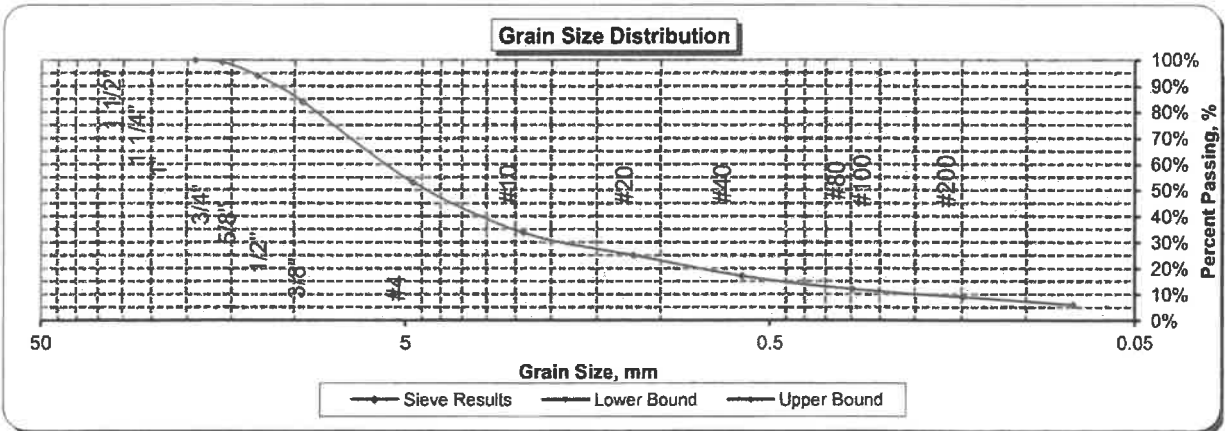
Asphalt Content: 5.42

**MOISTURE IN BITUMINOUS PAVING MIXTURES
AASHTO T 329**

Moisture Content: 0.08%

**TOTAL EVAPORABLE MOISTURE CONTENT OF
AGREGATE BY DRYING - ASTM C566**

Moisture Content: N/A

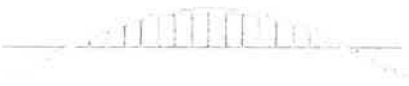


REVIEWED BY:

9/22/2020

X *[Signature]*

Dee Burrie
Technical Director



WESTERN PACIFIC ENGINEERING & SURVEY

1328 E. Hunter Place, Moses Lake, Washington
T: (509)765-1023 F: (509)765-1298

Asphalt Compaction Test Report

Report To: LCU
Attn: Pat Deneen
PO Box 808
Cle Elum, WA 98922

Date: 9/28/2020
Project #: 20646
Report #: 01

Project Name: Palomino Plat, Dapple Gray Way Improvements
Contractor: Central Paving
Fill Placement General Location : Roadway (Dapple Gray Way)
Technician: Matthew Maygren
Nuclear Gauge #: #0055: M351002911 Density Standard: 26936
Moisture Standard: 10928
Weather: Partly Cloudy
Air Temp. °F: 52
Test Date: 9/21/2020

Sample ID	Rice (pcf)	Sample Mix Design
Verbal Rice	157.4	Rice Provided Verbally by Scott of Central Paving

Summarized below are the results of field density tests performed by Western Pacific Engineering and Survey (WPES), on the above referenced project. These test results relate only to the items tested at the location tested. This report shall not be reproduced, except in full, without the prior written approval of WPES. Unless otherwise noted, our technicians utilized the Nuclear Densometer Method of testing in accordance with ASTM D6938.

Project Specifications

Specified % Compaction: 91

Retest: No

Test No.	Field Test Location	Elevation / Lift	Wet Density (pcf)	Theoretical Rice (pcf)	Percent Compaction (%)
1	Approx. 6ft. R of CL @ Sta. 50+50	Top of Asphalt	144.2	157.4	91.6
2	Approx. 5ft. L of CL @ Sta. 52+00	Top of Asphalt	144.4	157.4	91.7
3	Approx. 6ft. L of CL @ Sta. 53+75	Top of Asphalt	144.1	157.4	91.6
4	Approx. 5ft. R of CL @ Sta. 55+25	Top of Asphalt	144.7	157.4	91.9
5	Approx. 1ft. R of CL @ St.a 56+50	Top of Asphalt	145.6	157.4	92.5
6	Approx. 7ft. L of CL @ Sta. 58+00	Top of Asphalt	144.0	157.4	91.5
7	Approx. 4ft. L of CL @ St.a 59+50	Top of Asphalt	144.2	157.4	91.6
8	Approx. 2ft. L of CL @ Sta. 61+00	Top of Asphalt	143.4	157.4	91.1
9	Approx. 5ft. R of CL @ Sta. 62+50	Top of Asphalt	144.0	157.4	91.5
10	Approx. 5ft. L of CL @ Sta. 64+00	Top of Asphalt	145.9	157.4	92.7
11	Approx. 3ft. R of CL @ Sta. 65+50	Top of Asphalt	145.5	157.4	92.4
12	Approx. 6ft. L of CL @ Sta. 67+00	Top of Asphalt	145.2	157.4	92.2



WESTERN PACIFIC ENGINEERING & SURVEY

1328 E. Hunter Place, Moses Lake, Washington
T: (509)765-1023 F: (509)765-1298

13	Approx. 6ft. R of CL @ Sta. 68+50	Top of Asphalt	145.5	157.4	92.4
14	Approx. 7ft. L of CL @ Sta. 70+00	Top of Asphalt	144.8	157.4	92.0
15	Approx. 3ft. R of CL @ Sta. 71+50	Top of Asphalt	145.3	157.4	92.3
16	Approx. 5ft. L of CL @ Sta. 73+00	Top of Asphalt	146.0	157.4	92.8
17	Approx. 6ft. L of CL @ Sta. 74+50	Top of Asphalt	144.1	157.4	91.6
18	Approx. 5ft. R of CL @ Sta. 76+00	Top of Asphalt	145.8	157.4	92.6
19	Approx. 4ft. L of CL @ Sta. 77+50	Top of Asphalt	146.4	157.4	93.0
20	Approx. 8ft. R of CL @ Sta. 79+70	Top of Asphalt	144.4	157.4	91.7
21	Approx. 16ft. R of CL @ Sta. 80+10	Top of Asphalt	144.8	157.4	92.0

Remarks:

None

Deviations: No

PRIVATE ROAD NETWORK DRAWINGS FOR PALOMINO MAJOR PLAT, PHASE 4

Prepared By
WESTERN PACIFIC ENGINEERING & SURVEY



BRANCH MARK LISTING

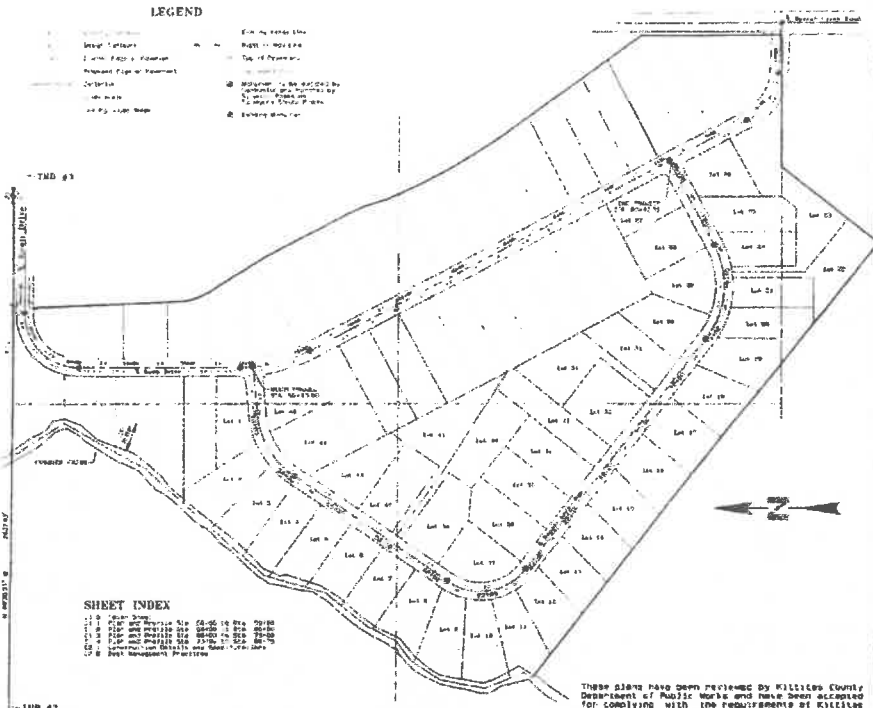
THIS PLAT NUMBER BEING THE EASTERN CORNER OF SECTION 22 T42N R10E S10E
 THIS PLAT NUMBER BEING THE EASTERN CORNER OF SECTION 22 T42N R10E S10E
 THIS PLAT NUMBER BEING THE EASTERN CORNER OF SECTION 22 T42N R10E S10E

NOTES:

The engineer has prepared these plans in accordance with and subject to the provisions of the laws of the State of California and the rules and regulations of the State Board of Public Works and the State Board of Engineers and Surveyors. The engineer is not responsible for the accuracy of the data furnished by the owner or the accuracy of the data furnished by the State Board of Public Works and the State Board of Engineers and Surveyors.

ADDITIONAL NOTES:

1. Refer to the plans of the Palomino Major Plat, Phase 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.
2. The engineer is not responsible for the accuracy of the data furnished by the owner or the accuracy of the data furnished by the State Board of Public Works and the State Board of Engineers and Surveyors.
3. The engineer is not responsible for the accuracy of the data furnished by the owner or the accuracy of the data furnished by the State Board of Public Works and the State Board of Engineers and Surveyors.
4. The engineer is not responsible for the accuracy of the data furnished by the owner or the accuracy of the data furnished by the State Board of Public Works and the State Board of Engineers and Surveyors.
5. The engineer is not responsible for the accuracy of the data furnished by the owner or the accuracy of the data furnished by the State Board of Public Works and the State Board of Engineers and Surveyors.
6. The engineer is not responsible for the accuracy of the data furnished by the owner or the accuracy of the data furnished by the State Board of Public Works and the State Board of Engineers and Surveyors.
7. The engineer is not responsible for the accuracy of the data furnished by the owner or the accuracy of the data furnished by the State Board of Public Works and the State Board of Engineers and Surveyors.
8. The engineer is not responsible for the accuracy of the data furnished by the owner or the accuracy of the data furnished by the State Board of Public Works and the State Board of Engineers and Surveyors.
9. The engineer is not responsible for the accuracy of the data furnished by the owner or the accuracy of the data furnished by the State Board of Public Works and the State Board of Engineers and Surveyors.
10. The engineer is not responsible for the accuracy of the data furnished by the owner or the accuracy of the data furnished by the State Board of Public Works and the State Board of Engineers and Surveyors.



SHEET INDEX

1	Sheet 101
2	Sheet 102
3	Sheet 103
4	Sheet 104
5	Sheet 105
6	Sheet 106
7	Sheet 107
8	Sheet 108
9	Sheet 109
10	Sheet 110

These plans have been reviewed by Killisnoe County Department of Public Works and have been accepted for compliance with the requirements of Killisnoe County Road Standards.

Mark Cook
County Engineer

01-15-2020
Date

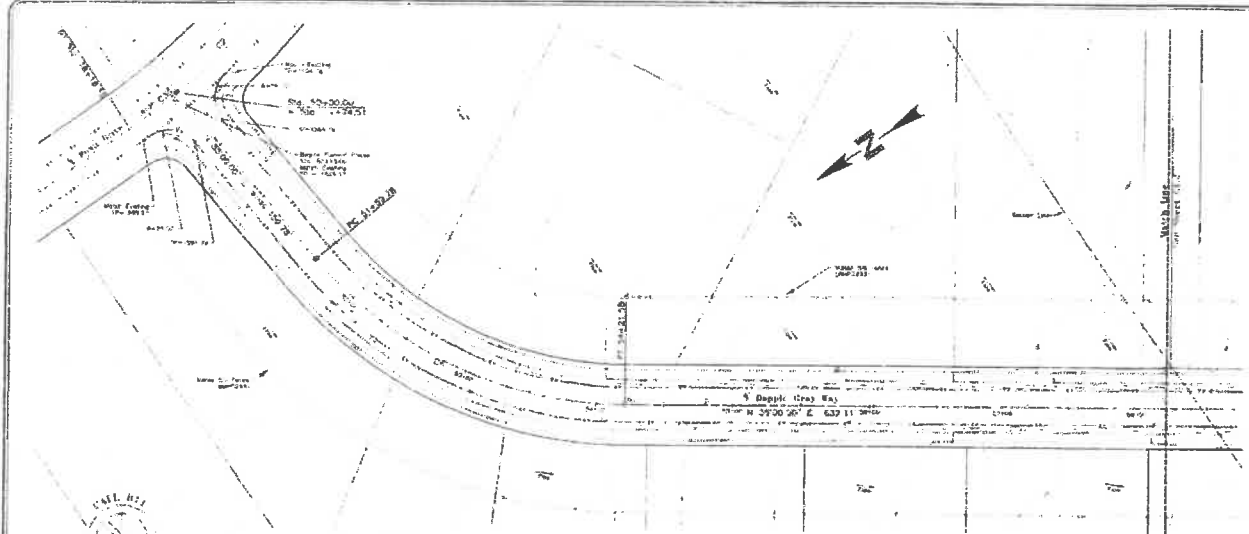


WESTERN PACIFIC ENGINEERING & SURVEY
 1117 N. 1st Street, Suite 200
 Ukiah, CA 95568
 Phone: (707) 438-1117
 Fax: (707) 438-1118
 Email: info@westernpacific.com

LCU, INC.
 PALOMINO MAJOR PLAT, PHASE 4
 DAUPLE GRAY WAY IMPROVEMENTS
 Cover Sheet

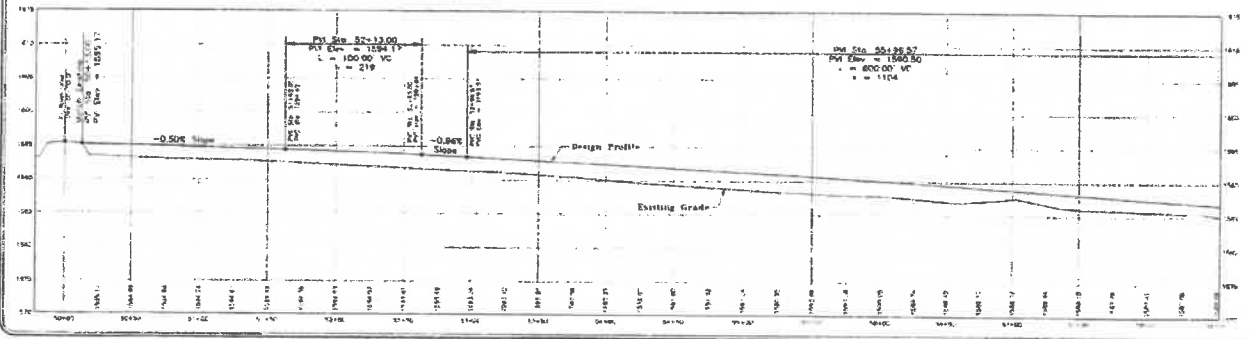
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 Checked by LCU
 Plotted by LCU
 Date: 01-15-2020

SHEET NO. C1.0
 181427



CURVE TABLE

Station	Curve Description	Radius (ft)	Length (ft)	Delta (deg)	PC (ft)	PT (ft)	VC (ft)
10+00	100' VC	-	100	-	-	-	100
10+00	219' VC	-	219	-	-	-	219
10+00	1104' VC	-	1104	-	-	-	1104



WESTERN PACIFIC
 ENGINEERING & SURVEY
 1000 S. GARDEN ST., SUITE 100
 ANAHEIM, CALIF. 92805

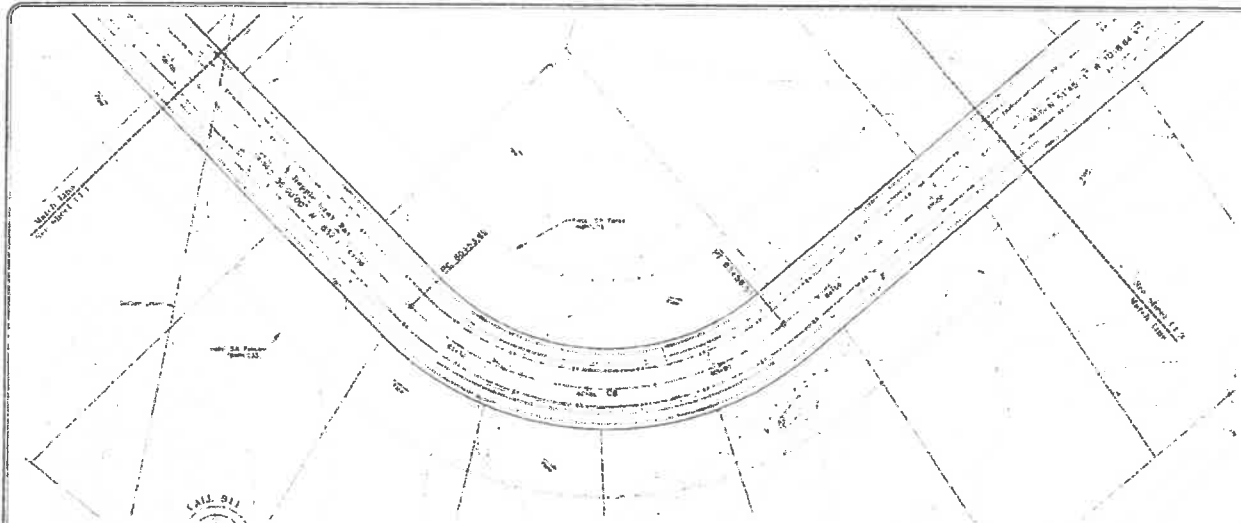
LCU, INC.
 PALOMINO MAJOR PLAT. PHASE 4
 DAPPLE GRAY WAY IMPROVEMENTS
 Plan and Profile Sta. 90+00 to Sta. 50+00

Designed by: [Name]
 Checked by: [Name]
 Project No. [Number]
 Date: [Date]

SHEET NO.
C1 1
 1-18-2018
 101827



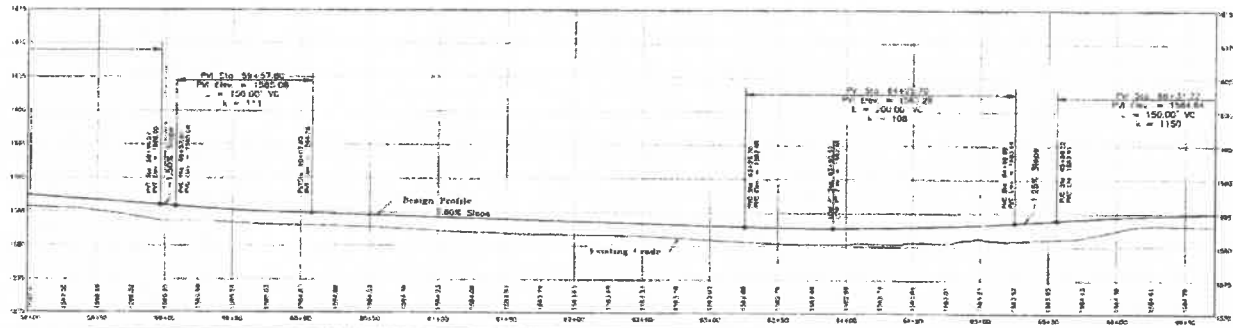
WESTERN PACIFIC
 ENGINEERING & SURVEY
 415 F STREET, OAKLAND, CALIF. 94612
 415 F STREET, OAKLAND, CALIF. 94612



CURVE TABLE

STATIONING: 58+00 TO 68+00
 CURVE DATA: 150' VC, 115' L, 1.50% GRADE

SCALE: 1" = 40' HORIZ.
 1" = 10' VERT.



LCU, INC.
 PALOMINO MAJOR PLAT. PHASE 4
 DAPPLE GRAY WAY IMPROVEMENTS
 Plan and Profile Sta. 59+00 to Sta. 68+00

Prepared by: JDB
 Checked by: JDB
 Drawn by: JDB
 Date: 05/08/08
 Scale: 1" = 40' HORIZ.
 1" = 10' VERT.

SHEET NO.
C12
 OF 15 SHEETS
 151887



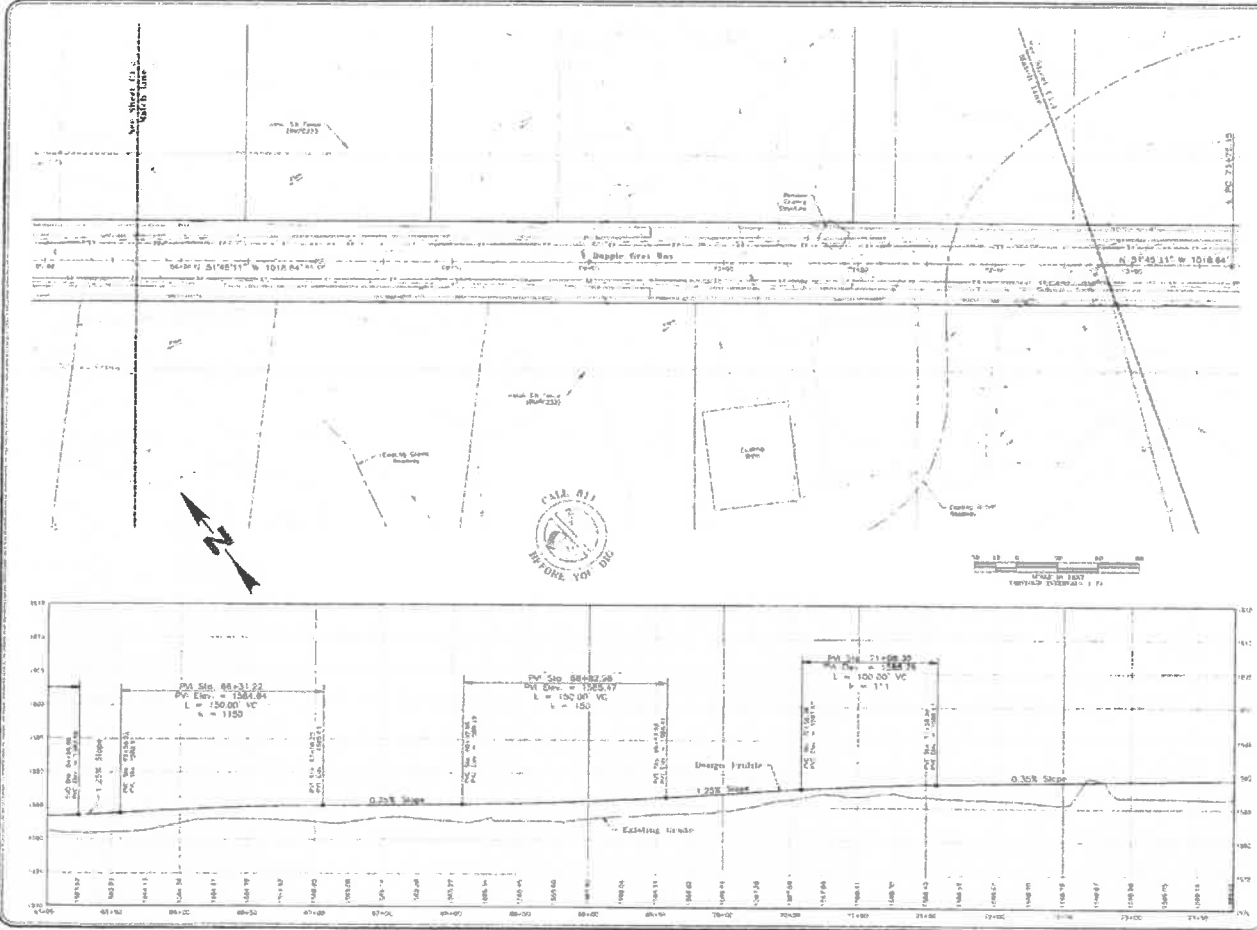
WESTERN PACIFIC
Engineering & Survey
1317 L Street, San Francisco, California

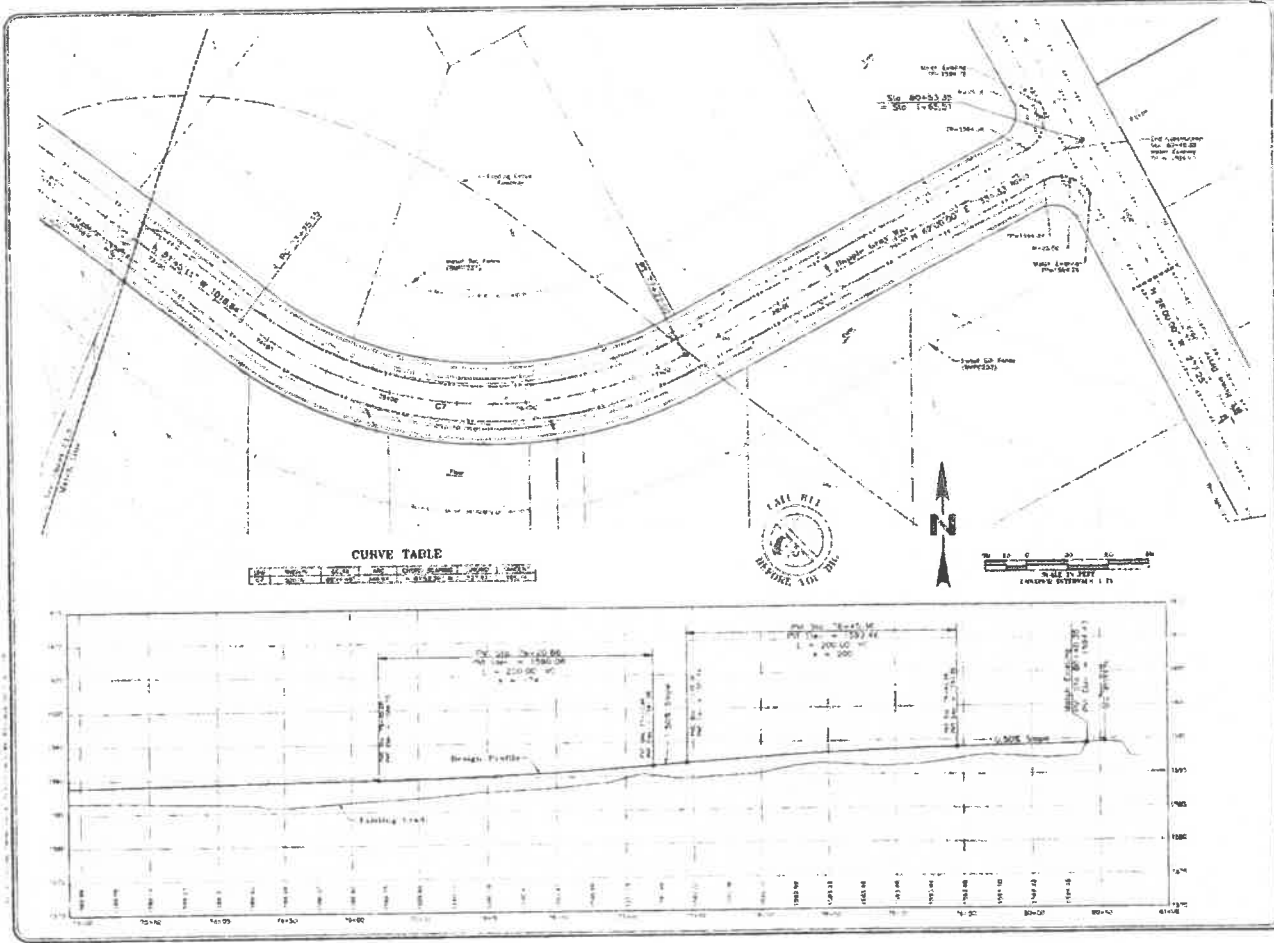
Table with 2 columns: Description, Quantity. Includes items like 'Stationing', 'Right of Way', 'Grading', etc.


LCU, INC.
PALOMINO MAJOR PLAT PHASE 4
DAPPLE GRAY WAY IMPROVEMENTS
Plan and Profile Sta. 66+00 to Sta. 73+00

Designed by: [Name]
Checked by: [Name]
Date: [Date]

SHEET NO.
C1.3
of 16-160
19887







**WESTERN PACIFIC
ENGINEERING & SURVEY**

1400 Broadway, San Francisco, California
 Telephone: 398-1234

LCU, INC.
PALOMINO MAJOR PLAT, PHASE 4
PURPLE GRAY WAY IMPROVEMENTS
 Plan and Profile Sta. 75+00 to Sta. 80+75
 August, 1962

Designed by: [Name]
 Checked by: [Name]
 Date: 8/15/62
 Scale: 1" = 40'
 for 11 x 17" sheets

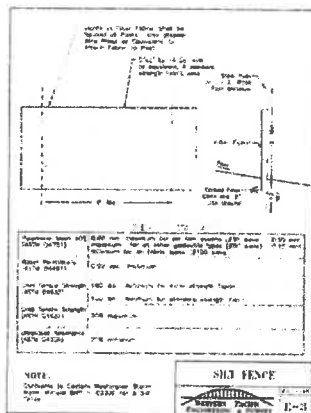
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C1.1
 of 10 sheets
191027

NOTES

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM ALL AFFECTED AGENCIES AND AGENCIES OF THE STATE OF CALIFORNIA. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM ALL AFFECTED AGENCIES AND AGENCIES OF THE STATE OF CALIFORNIA. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM ALL AFFECTED AGENCIES AND AGENCIES OF THE STATE OF CALIFORNIA.

2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM ALL AFFECTED AGENCIES AND AGENCIES OF THE STATE OF CALIFORNIA. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM ALL AFFECTED AGENCIES AND AGENCIES OF THE STATE OF CALIFORNIA. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM ALL AFFECTED AGENCIES AND AGENCIES OF THE STATE OF CALIFORNIA.

3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM ALL AFFECTED AGENCIES AND AGENCIES OF THE STATE OF CALIFORNIA. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM ALL AFFECTED AGENCIES AND AGENCIES OF THE STATE OF CALIFORNIA. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM ALL AFFECTED AGENCIES AND AGENCIES OF THE STATE OF CALIFORNIA.



WESTERN PACIFIC ENGINEERING & SURVEY, INC.
1111 N. GARDEN ST., PALMDALE, CALIF. 93550

LCU, INC.
PALMDALE MAJOR PLAT, PHASE 4
DAPPLE GRAY DRIVE IMPROVEMENTS
Best Management Practices

Prepared by: GWS
Checked by: GWS
Date: 11/11/11
Scale: 1" = 40'
Sheet: 1 of 2
Project: 1111 N. GARDEN ST., PALMDALE, CALIF. 93550

SHEET NO. C2.2
e 11-11-2011
181887



**WESTERN PACIFIC
ENGINEERING & SURVEY
INC.**
1414 N. 10TH STREET, SUITE 100
TULSA, OKLAHOMA 74103
Phone: (918) 438-1111
Fax: (918) 438-1112

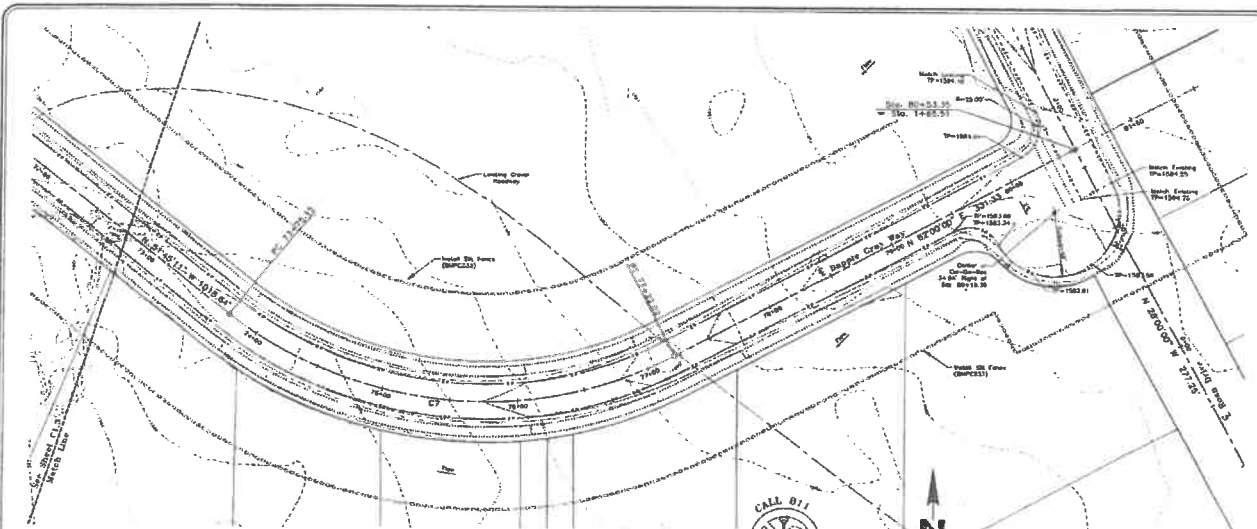
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Sheet No.	10000
Date	10/20/00
Scale	AS SHOWN
Author	AS SHOWN
Checker	AS SHOWN
Engineer	AS SHOWN

LCU, INC.
PALOMINO MAJOR PLAT. PHASE 4
DAPPLE GRAY WAY IMPROVEMENTS
Plan and Profile Sta. 73+00 to Sta. 80+75

Assigned by: LCU
Drawn by: [Name]
Checked by: [Name]
Project No.: 10000
Sheet No.: 10000
Scale: 1" = 40'
Date: 10/20/00

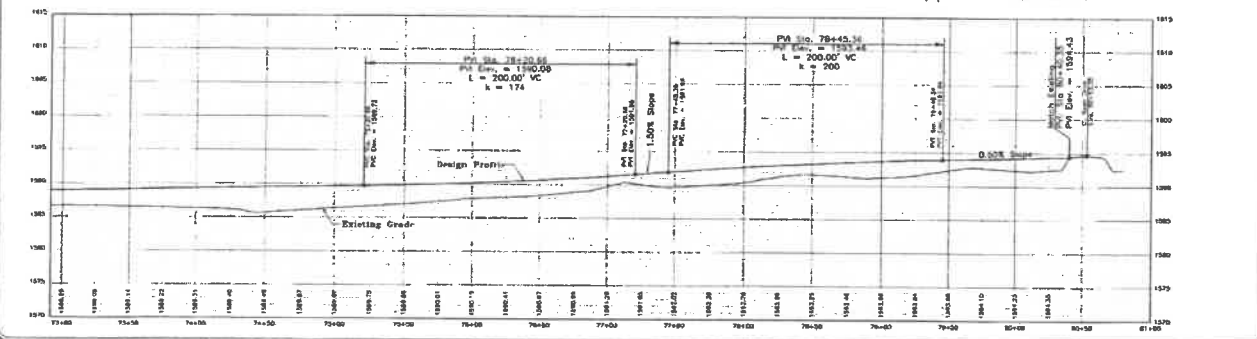
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C1.4**

101827

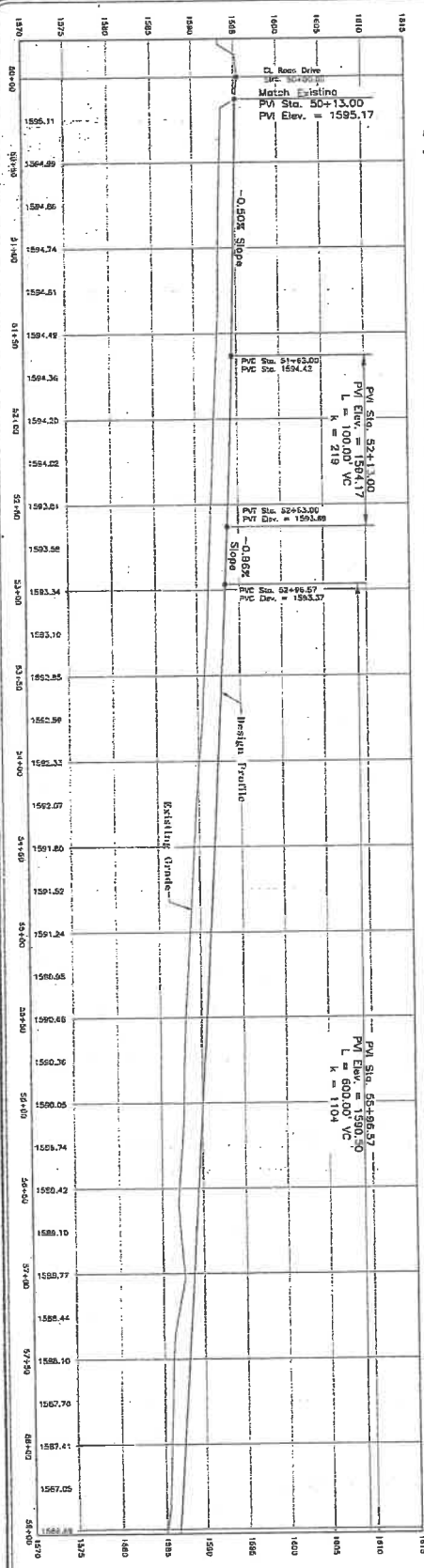


CURVE TABLE

Station	Station	Station	Station	Station	Station
73+00	73+50	74+00	74+50	75+00	75+50



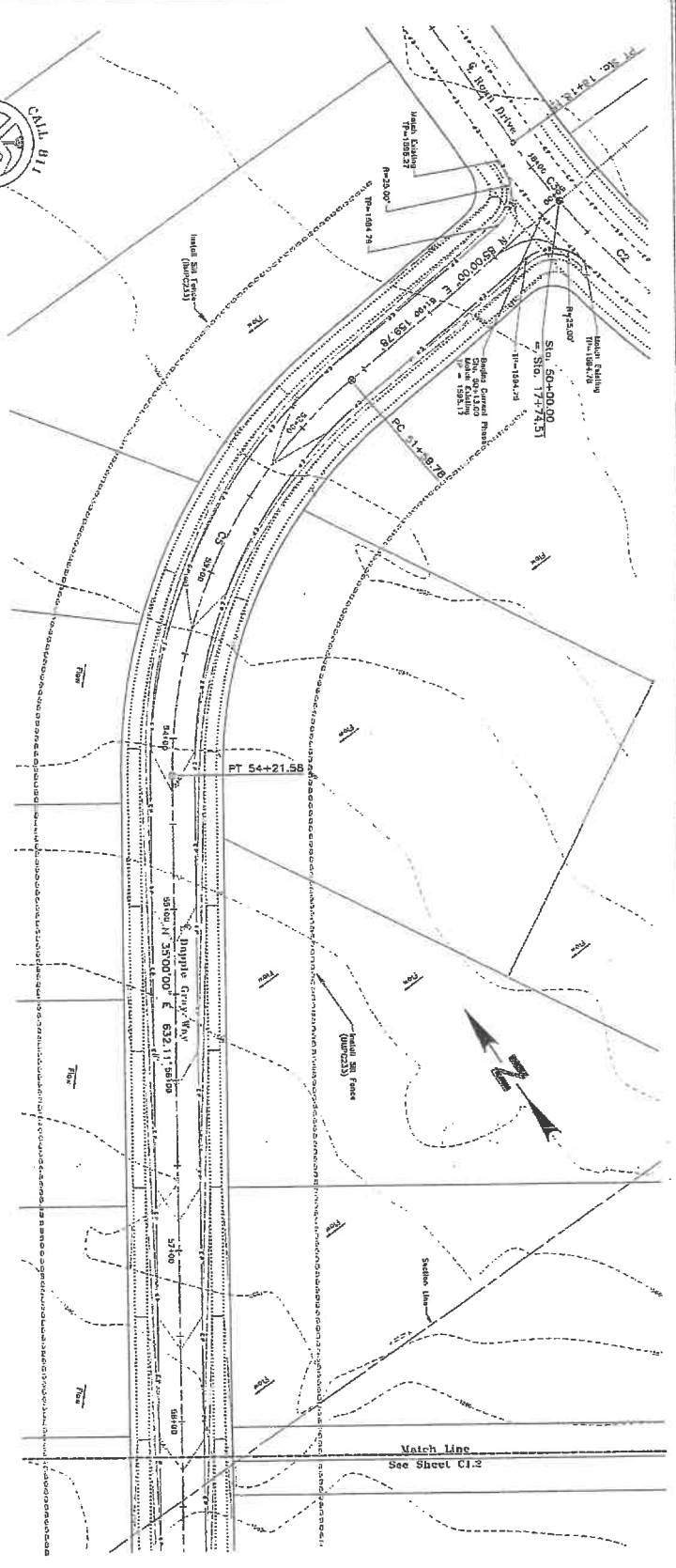
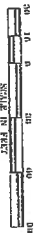
LCU, INC. Palomino Major Plat. Phase 4, Dapple Gray Way Improvement, Station 73+00 to 80+75, Sheet C1.4



CURVE TABLE

LINE	STATION	ELEV.	CHANG. GRADE	CHANG. CURVE	CHANG. SLOPE
1	50+00	1595.17	1595.17	1595.17	1595.17
2	50+13.00	1594.42	1594.42	1594.42	1594.42
3	50+26.00	1593.67	1593.67	1593.67	1593.67
4	50+39.00	1592.92	1592.92	1592.92	1592.92
5	50+52.00	1592.17	1592.17	1592.17	1592.17
6	50+65.00	1591.42	1591.42	1591.42	1591.42
7	50+78.00	1590.67	1590.67	1590.67	1590.67
8	50+91.00	1589.92	1589.92	1589.92	1589.92
9	51+04.00	1589.17	1589.17	1589.17	1589.17
10	51+17.00	1588.42	1588.42	1588.42	1588.42
11	51+30.00	1587.67	1587.67	1587.67	1587.67
12	51+43.00	1586.92	1586.92	1586.92	1586.92
13	51+56.00	1586.17	1586.17	1586.17	1586.17
14	52+09.00	1585.42	1585.42	1585.42	1585.42
15	52+22.00	1584.67	1584.67	1584.67	1584.67
16	52+35.00	1583.92	1583.92	1583.92	1583.92
17	52+48.00	1583.17	1583.17	1583.17	1583.17
18	52+61.00	1582.42	1582.42	1582.42	1582.42
19	52+74.00	1581.67	1581.67	1581.67	1581.67
20	52+87.00	1580.92	1580.92	1580.92	1580.92
21	53+00.00	1580.17	1580.17	1580.17	1580.17
22	53+13.00	1579.42	1579.42	1579.42	1579.42
23	53+26.00	1578.67	1578.67	1578.67	1578.67
24	53+39.00	1577.92	1577.92	1577.92	1577.92
25	53+52.00	1577.17	1577.17	1577.17	1577.17
26	54+05.00	1576.42	1576.42	1576.42	1576.42
27	54+18.00	1575.67	1575.67	1575.67	1575.67
28	54+31.00	1574.92	1574.92	1574.92	1574.92
29	54+44.00	1574.17	1574.17	1574.17	1574.17
30	54+57.00	1573.42	1573.42	1573.42	1573.42
31	55+10.00	1572.67	1572.67	1572.67	1572.67
32	55+23.00	1571.92	1571.92	1571.92	1571.92
33	55+36.00	1571.17	1571.17	1571.17	1571.17
34	55+49.00	1570.42	1570.42	1570.42	1570.42
35	55+62.00	1569.67	1569.67	1569.67	1569.67
36	55+75.00	1568.92	1568.92	1568.92	1568.92
37	55+88.00	1568.17	1568.17	1568.17	1568.17
38	56+01.00	1567.42	1567.42	1567.42	1567.42
39	56+14.00	1566.67	1566.67	1566.67	1566.67
40	56+27.00	1565.92	1565.92	1565.92	1565.92
41	56+40.00	1565.17	1565.17	1565.17	1565.17
42	56+53.00	1564.42	1564.42	1564.42	1564.42
43	57+06.00	1563.67	1563.67	1563.67	1563.67
44	57+19.00	1562.92	1562.92	1562.92	1562.92
45	57+32.00	1562.17	1562.17	1562.17	1562.17
46	57+45.00	1561.42	1561.42	1561.42	1561.42
47	57+58.00	1560.67	1560.67	1560.67	1560.67
48	58+11.00	1559.92	1559.92	1559.92	1559.92
49	58+24.00	1559.17	1559.17	1559.17	1559.17
50	58+37.00	1558.42	1558.42	1558.42	1558.42
51	58+50.00	1557.67	1557.67	1557.67	1557.67
52	59+03.00	1556.92	1556.92	1556.92	1556.92
53	59+16.00	1556.17	1556.17	1556.17	1556.17
54	59+29.00	1555.42	1555.42	1555.42	1555.42
55	59+42.00	1554.67	1554.67	1554.67	1554.67
56	59+55.00	1553.92	1553.92	1553.92	1553.92
57	60+08.00	1553.17	1553.17	1553.17	1553.17
58	60+21.00	1552.42	1552.42	1552.42	1552.42
59	60+34.00	1551.67	1551.67	1551.67	1551.67
60	60+47.00	1550.92	1550.92	1550.92	1550.92
61	60+60.00	1550.17	1550.17	1550.17	1550.17
62	60+73.00	1549.42	1549.42	1549.42	1549.42
63	60+86.00	1548.67	1548.67	1548.67	1548.67
64	60+99.00	1547.92	1547.92	1547.92	1547.92
65	61+12.00	1547.17	1547.17	1547.17	1547.17
66	61+25.00	1546.42	1546.42	1546.42	1546.42
67	61+38.00	1545.67	1545.67	1545.67	1545.67
68	61+51.00	1544.92	1544.92	1544.92	1544.92
69	62+04.00	1544.17	1544.17	1544.17	1544.17
70	62+17.00	1543.42	1543.42	1543.42	1543.42
71	62+30.00	1542.67	1542.67	1542.67	1542.67
72	62+43.00	1541.92	1541.92	1541.92	1541.92
73	62+56.00	1541.17	1541.17	1541.17	1541.17
74	63+09.00	1540.42	1540.42	1540.42	1540.42
75	63+22.00	1539.67	1539.67	1539.67	1539.67
76	63+35.00	1538.92	1538.92	1538.92	1538.92
77	63+48.00	1538.17	1538.17	1538.17	1538.17
78	63+61.00	1537.42	1537.42	1537.42	1537.42
79	63+74.00	1536.67	1536.67	1536.67	1536.67
80	63+87.00	1535.92	1535.92	1535.92	1535.92
81	64+00.00	1535.17	1535.17	1535.17	1535.17
82	64+13.00	1534.42	1534.42	1534.42	1534.42
83	64+26.00	1533.67	1533.67	1533.67	1533.67
84	64+39.00	1532.92	1532.92	1532.92	1532.92
85	64+52.00	1532.17	1532.17	1532.17	1532.17
86	64+65.00	1531.42	1531.42	1531.42	1531.42
87	64+78.00	1530.67	1530.67	1530.67	1530.67
88	64+91.00	1529.92	1529.92	1529.92	1529.92
89	65+04.00	1529.17	1529.17	1529.17	1529.17
90	65+17.00	1528.42	1528.42	1528.42	1528.42
91	65+30.00	1527.67	1527.67	1527.67	1527.67
92	65+43.00	1526.92	1526.92	1526.92	1526.92
93	65+56.00	1526.17	1526.17	1526.17	1526.17
94	66+09.00	1525.42	1525.42	1525.42	1525.42
95	66+22.00	1524.67	1524.67	1524.67	1524.67
96	66+35.00	1523.92	1523.92	1523.92	1523.92
97	66+48.00	1523.17	1523.17	1523.17	1523.17
98	66+61.00	1522.42	1522.42	1522.42	1522.42
99	66+74.00	1521.67	1521.67	1521.67	1521.67
100	66+87.00	1520.92	1520.92	1520.92	1520.92
101	67+00.00	1520.17	1520.17	1520.17	1520.17
102	67+13.00	1519.42	1519.42	1519.42	1519.42
103	67+26.00	1518.67	1518.67	1518.67	1518.67
104	67+39.00	1517.92	1517.92	1517.92	1517.92
105	67+52.00	1517.17	1517.17	1517.17	1517.17
106	67+65.00	1516.42	1516.42	1516.42	1516.42
107	67+78.00	1515.67	1515.67	1515.67	1515.67
108	67+91.00	1514.92	1514.92	1514.92	1514.92
109	68+04.00	1514.17	1514.17	1514.17	1514.17
110	68+17.00	1513.42	1513.42	1513.42	1513.42
111	68+30.00	1512.67	1512.67	1512.67	1512.67
112	68+43.00	1511.92	1511.92	1511.92	1511.92
113	68+56.00	1511.17	1511.17	1511.17	1511.17
114	69+09.00	1510.42	1510.42	1510.42	1510.42
115	69+22.00	1509.67	1509.67	1509.67	1509.67
116	69+35.00	1508.92	1508.92	1508.92	1508.92
117	69+48.00	1508.17	1508.17	1508.17	1508.17
118	69+61.00	1507.42	1507.42	1507.42	1507.42
119	69+74.00	1506.67	1506.67	1506.67	1506.67
120	69+87.00	1505.92	1505.92	1505.92	1505.92
121	70+00.00	1505.17	1505.17	1505.17	1505.17
122	70+13.00	1504.42	1504.42	1504.42	1504.42
123	70+26.00	1503.67	1503.67	1503.67	1503.67
124	70+39.00	1502.92	1502.92	1502.92	1502.92
125	70+52.00	1502.17	1502.17	1502.17	1502.17

CURVE TABLE



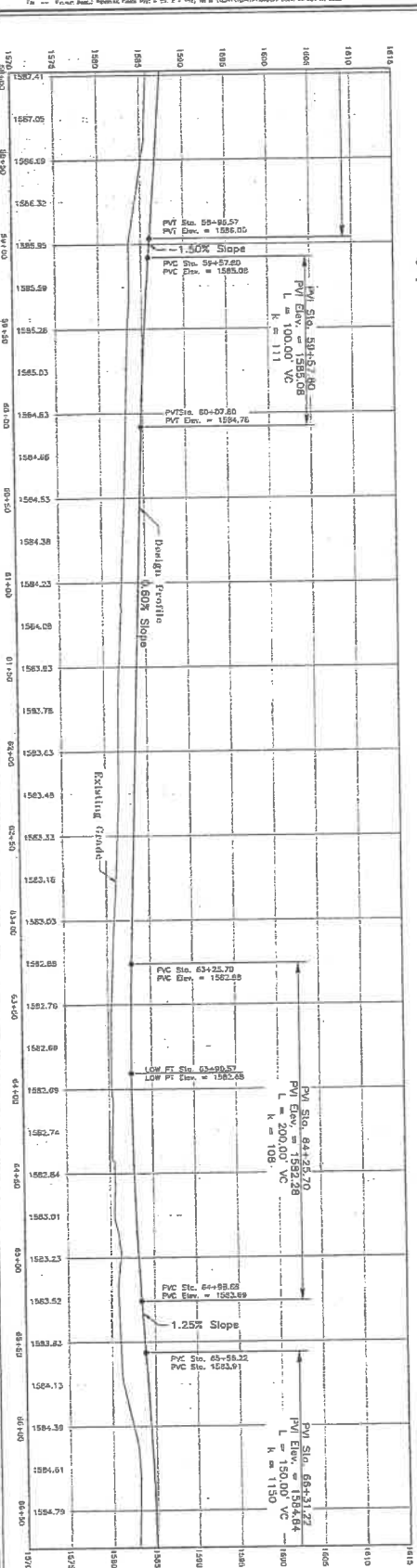
SHEET NO.
C1.1
181027

LCU, INC.
PALOMINO MAJOR PLAT, PHASE 4
DAPPLE GRAY WAY IMPROVEMENTS
Plan and Profile Sta. 50+00 to Sta. 59+00
Chittas County Washington

No.	Revision	Date	By

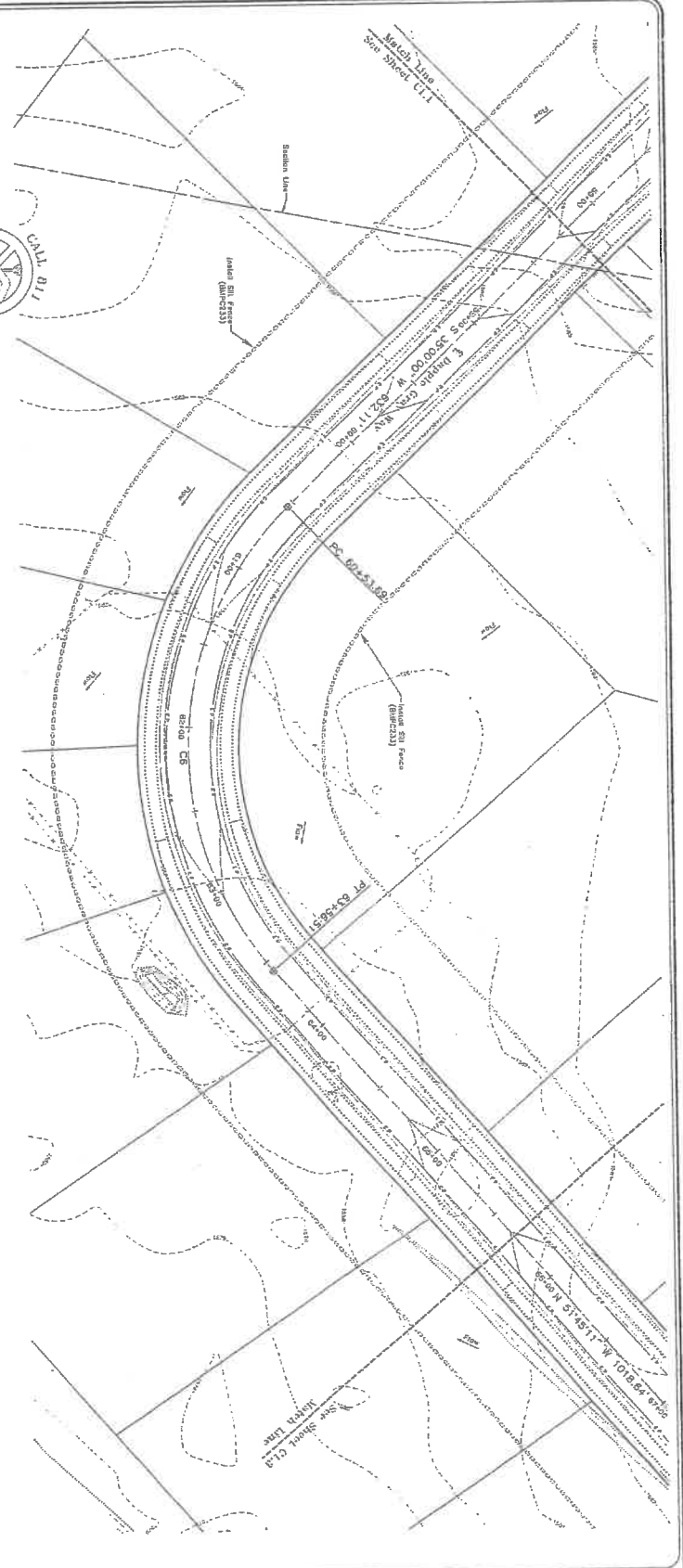
WESTERN PACIFIC
ENGINEERING & SURVEY
A TERRA DEVELOPMENT SERVICES CORPORATION
1328 C. Hunter Place, Meigs Gate, Washington
1400776-1102 F(809)765-1258
Service in Oregon, WA, CA





CURVE TABLE

STATION	PC	PT	PI	VC	VC	VC	VC	VC	VC
59+00	59+00	60+00	59+50.57	100.00	111	-1.50%			
60+00	60+00	63+50	60+25.70	200.00	109	1.25%			
63+50	63+50	66+50	65+00.37	200.00	109	1.25%			



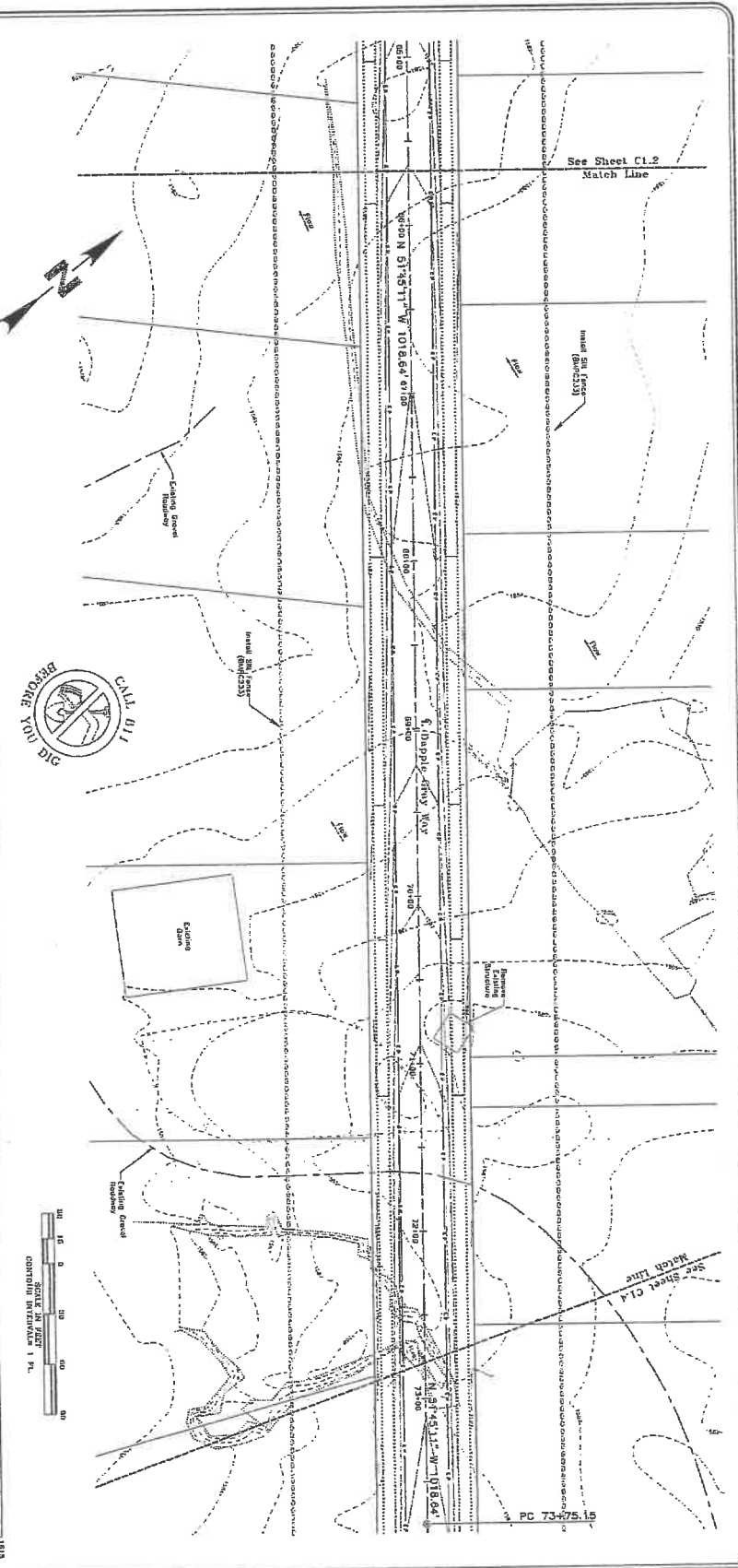
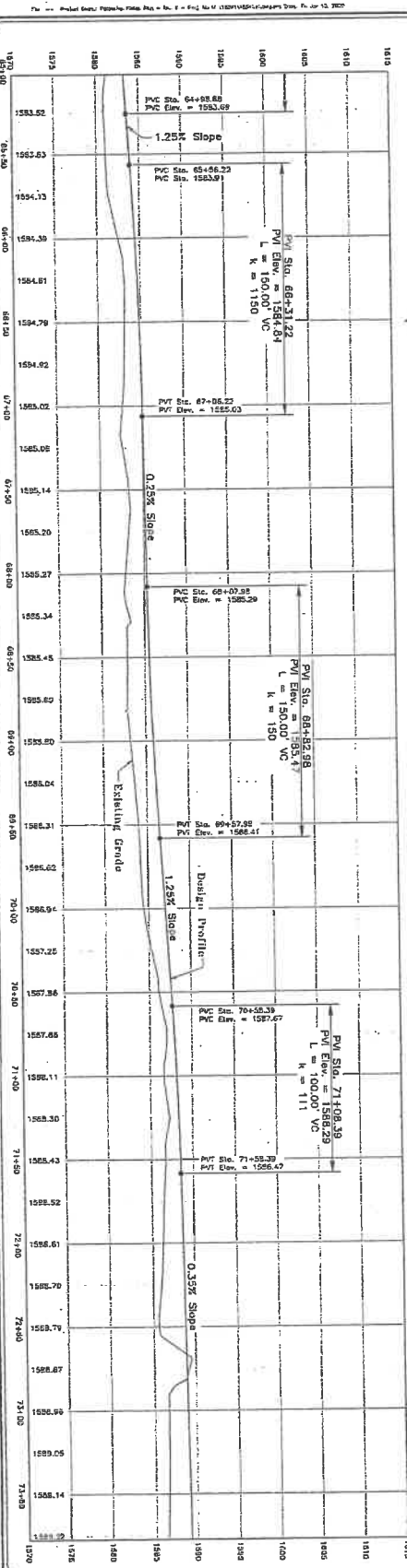
SHEET NO.
C1.2
01-16-2020
181887

LCU, INC.
PALOMINO MAJOR PLAT, PHASE 4
DAPPLE GRAY WAY IMPROVEMENTS
Plan and Profile Sta. 59+00 to Sta. 66+00
Santa Clara County Washington

No.	Revision	Date	By

WESTERN PACIFIC ENGINEERING & SURVEY
A TERRA DEVELOPMENT SERVICES CORPORATION
1525 E. Hunter Place, Bessie Lake, Washington
72000755-1023 62609754-1229
Service - Washington and BVA



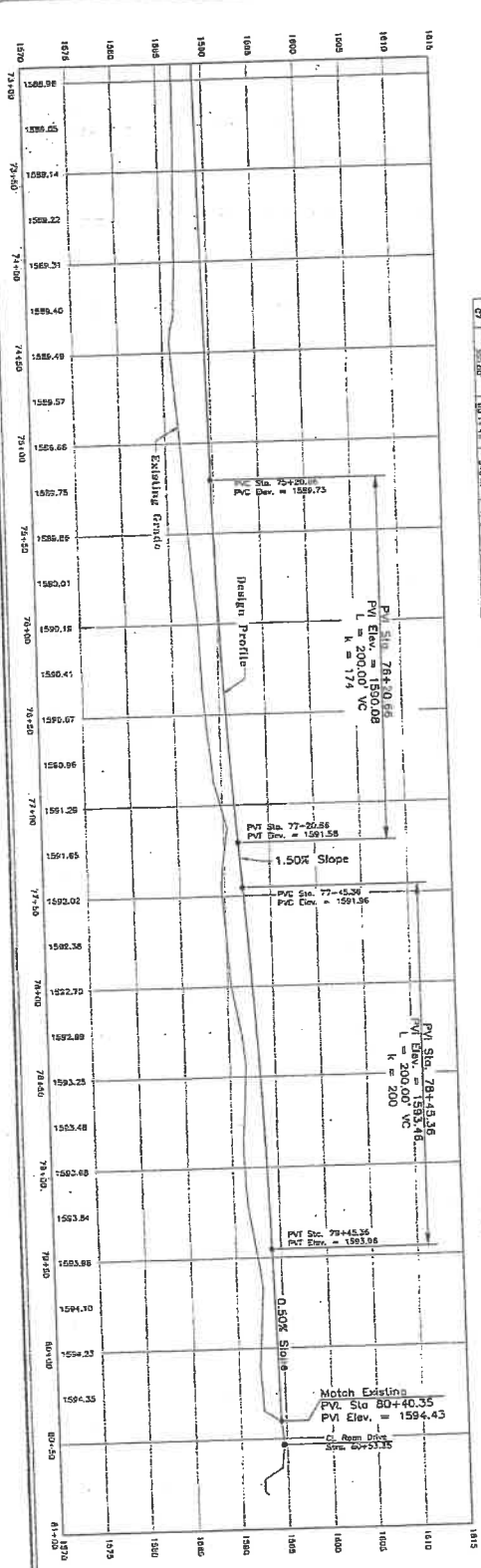


SHEET NO. C1.3
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LCU, INC.
 PALOMINO MAJOR PLAT, PHASE 4
 DAPPLE GRAY WAY IMPROVEMENTS
 Plan and Profile Sta. 66+00 to Sta. 73+00
 KLU/Use County Washington

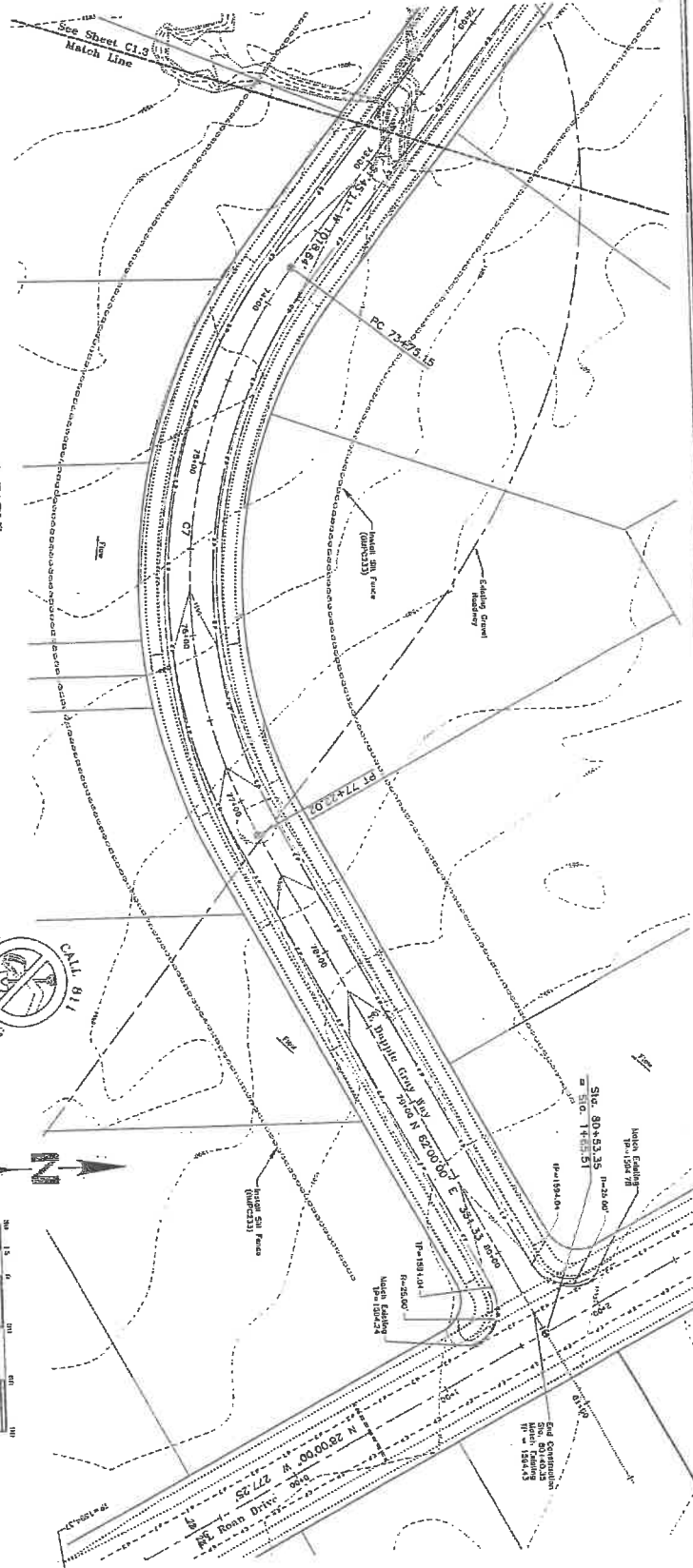
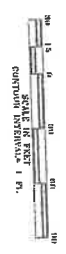
WESTERN PACIFIC
 ENGINEERING & SURVEY
 A TERRA DEVELOPMENT SERVICES CORPORATION
 1328 E. Boulder Place, Mesa, AZ 85204
 Tel: (602) 765-1023 Fax: (602) 765-1299





CURVE TABLE

STATION	PC	PT	PI	Curve Length	Curve Type
73+50	73+50	74+50	74+00	100.00	Vertical
77+50	77+50	78+50	78+00	100.00	Vertical
79+50	79+50	80+50	80+00	100.00	Vertical



SHEET NO.
C1.4
of 16 Sheets
151857

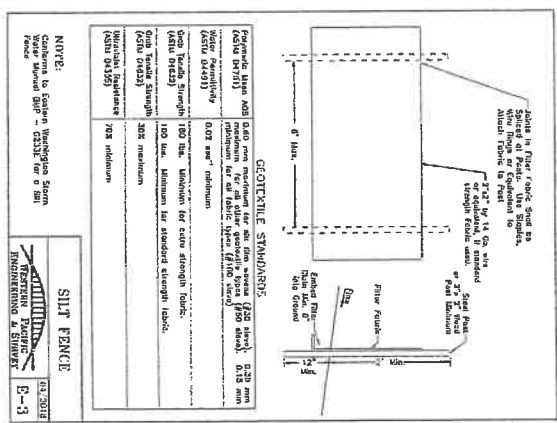
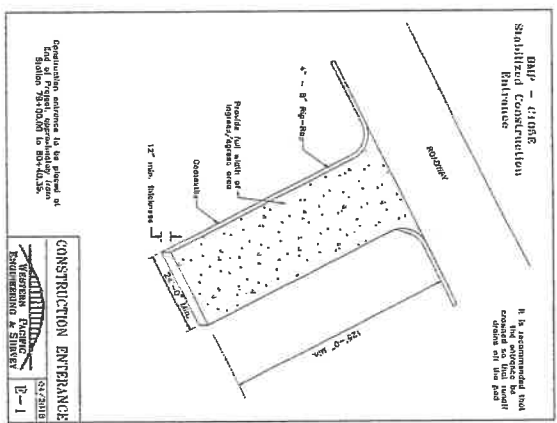
LCU, INC.
PALOMINO MAJOR PLAT, PHASE 4
DAPPLE GRAY WAY IMPROVEMENTS
Plan and Profile Sta. 73+00 to Sta. 80+75
Washington

**WESTERN PACIFIC
ENGINEERING & SURVEY**
A TERRA DEVELOPMENT SERVICES CORPORATION
1520 E. HORTON PIKE, MASSA LODGE, WASHINGTON
TECUMSEH, MO. 64701-1230 FAX 816-485-1230
SINCE 1910



NOTES:

- 1. Work Clearing Limits
- 2. General Elevation
- 3. Erosion Control
- 4. Stabilization
- 5. Construction
- 6. Slope
- 7. Drainage
- 8. Foundation
- 9. Retention
- 10. Access
- 11. Easement
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- 99. Easement
- 100. Easement



NOTE: Geotextile fabric shall be installed with the application of effective force to prevent creasing throughout the life of the project. The specific force for each fabric shall be determined by the manufacturer.

Geotextile Type	Minimum Force (lb/ft ²)	Minimum Force (lb/ft ²)	Minimum Force (lb/ft ²)
Geotextile Type 1 (ASTM D4431)	100	100	100
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Geotextile Type 21 (ASTM D4431)	1100	1100	1100
Geotextile Type 22 (ASTM D4431)	1150	1150	1150
Geotextile Type 23 (ASTM D4431)	1200	1200	1200
Geotextile Type 24 (ASTM D4431)	1250	1250	1250
Geotextile Type 25 (ASTM D4431)	1300	1300	1300
Geotextile Type 26 (ASTM D4431)	1350	1350	1350
Geotextile Type 27 (ASTM D4431)	1400	1400	1400
Geotextile Type 28 (ASTM D4431)	1450	1450	1450
Geotextile Type 29 (ASTM D4431)	1500	1500	1500
Geotextile Type 30 (ASTM D4431)	1550	1550	1550
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Geotextile Type 33 (ASTM D4431)	1700	1700	1700
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Geotextile Type 81 (ASTM D4431)	4100	4100	4100
Geotextile Type 82 (ASTM D4431)	4150	4150	4150
Geotextile Type 83 (ASTM D4431)	4200	4200	4200
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Geotextile Type 89 (ASTM D4431)	4500	4500	4500
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Geotextile Type 95 (ASTM D4431)	4800	4800	4800
Geotextile Type 96 (ASTM D4431)	4850	4850	4850
Geotextile Type 97 (ASTM D4431)	4900	4900	4900
Geotextile Type 98 (ASTM D4431)	4950	4950	4950
Geotextile Type 99 (ASTM D4431)	5000	5000	5000
Geotextile Type 100 (ASTM D4431)	5050	5050	5050

WESTERN PACIFIC ENGINEERING & SURVEY
A TERRA DEVELOPMENT SERVICES CORPORATION
1320 E. Hunter Place, Moses Lake, Washington
98946-1228
TEL: (509) 765-1228

WESTERN PACIFIC ENGINEERING & SURVEY
E-3

WESTERN PACIFIC ENGINEERING & SURVEY
E-2

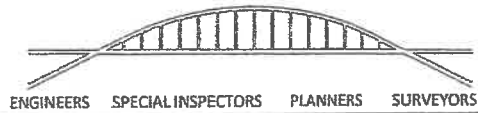
WESTERN PACIFIC ENGINEERING & SURVEY
E-1

LCU, INC.
PALOMINO MAJOR PLAT, PHASE 4
DAPPLE GRAY DRIVE IMPROVEMENTS
Best Management Practices

WESTERN PACIFIC ENGINEERING & SURVEY
E-1

WESTERN PACIFIC ENGINEERING & SURVEY
E-2

WESTERN PACIFIC ENGINEERING & SURVEY
E-3



WESTERN PACIFIC ENGINEERING & SURVEY

PIONEER WAY PROFESSIONAL CENTER
1328 E. HUNTER PLACE
MOSES LAKE, WASHINGTON 98837
OFFICE: (509) 765-1023
FAX: (509) 765-1298

August 1, 2019

LCU, Inc.
Attn: Pat Deneen
P.O. Box 394
Cle Elum, Washington 98922

SUBJECT: Stormwater Management Plan for Phase IV of the Palomino Major Plat located in Ellensburg, Washington.
WPES Project No. 18540

Dear Mr. Deneen:

The purpose of this letter is to outline the stormwater management plan for Phase IV of the Palomino Major Plat in Ellensburg, Washington. The scope of Phase IV of the Palomino Major Plat development, includes the construction of Dapple Gray Way to service 45 additional residential lots. It is expected that each of the lots will contain newly constructed single family homes. The development is located approximately three miles northwest of downtown Ellensburg, Washington. The site can be accessed to the northwest from Bowers Road or from the southeast from Reecer Creek Road. More particularly, the site is located in the Northwest quarter of Section 27, Township 18 North, Range 18 East, W.M., on Kittitas County's Tax Parcel No. 491033

The area in which the Palomino Fields Development is located, is known to have seasonal high ground water during the summer months. Due to the high groundwater, the traditional trenches and swales used to manage stormwater runoff are highly unlikely to function properly. Problems with the high ground water were encountered during the construction of Phase I of this development. At that time, we worked closely with Kittitas County to come up with a solution that would best manage the stormwater runoff from this development. As a result, the road design for this development calls for raising the road bed above the existing native grade. In raising grade of the road, the stormwater will be able to run off the roadway. In order to handle the runoff from the roadway, as well as the lots themselves, the area located along the roadbed will be reserved to be used as infiltration areas. By minimizing compaction and allowing only drought resistant low growing grasses to be planted in these infiltration areas, the stormwater runoff will be able to properly infiltrate into the ground.

Attached to this letter is an exhibit showing a typical cross section of the stormwater infiltration areas located along the roadway. Within the infiltration area, one foot tall rock check dams will be installed at every foot of vertical grade drop. These check dams are intended to decrease the stormwater flow, minimize channel scour, and promote deposit of sediment. BMP C207, of the *Eastern Washington Stormwater Management Manual*, published by the Washington State Department of Ecology, shall

be followed during the construction of the check dams. As you know, you will also be required to follow all Washington Department of Ecology and Kittitas County Stormwater Standards during the construction of this development.

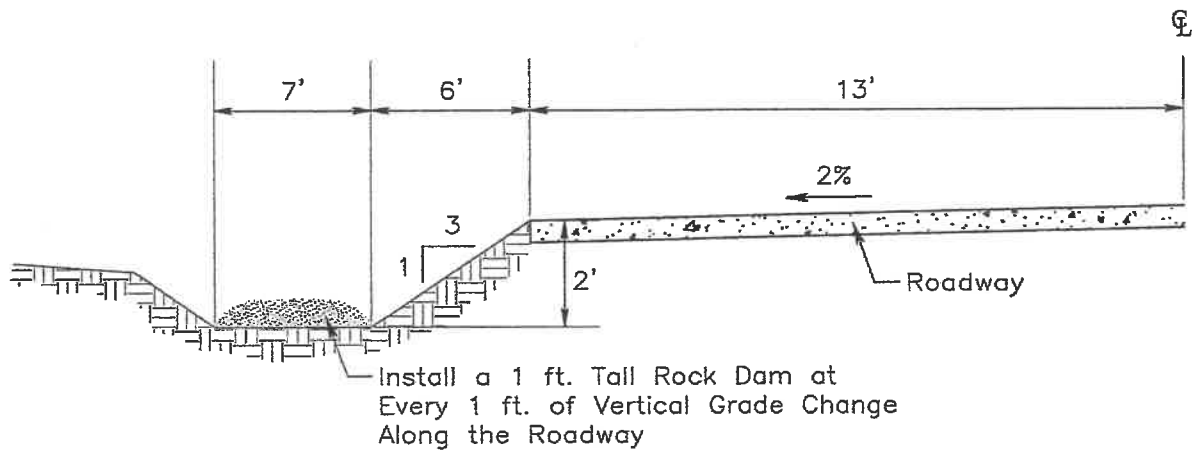
Thank you for allowing us to serve your engineering needs. If you have any further questions, please feel free to contact our office.

Sincerely,



Nathaniel D. Nofziger, P.E.
WESTERN PACIFIC ENGINEERING & SURVEY
1328 E. Hunter Place
Moses Lake, Washington 98837
(509) 765-1023





NOTES:

1. The Roadway shall be built up from the native grade. Stormwater collection areas shall not be dug out, or below native grade.
2. Drought resistant, low growing grasses shall be planted in the stormwater collection areas.

WESTERN PACIFIC
ENGINEERING & SURVEY
A TERRA DEVELOPMENT SERVICES CORPORATION

1328 East
 Hunter Place
 Moses Lake, WA
 T:(509)765-1023
 F:(509)765-1298

PALOMINO MAJOR PLAT
 Stormwater Exhibit
 Ellensburg, Washington

DRAWN BY: BNO
 CHECKED BY: NDN

DATE:
 07/2019

WPE PROJECT #:
 18541

Scale: 1" = N/A
 PLATE NO.: 01

COUNTY ROAD NETWORK AMENDMENT FOR PALOMINO MAJOR PLAT



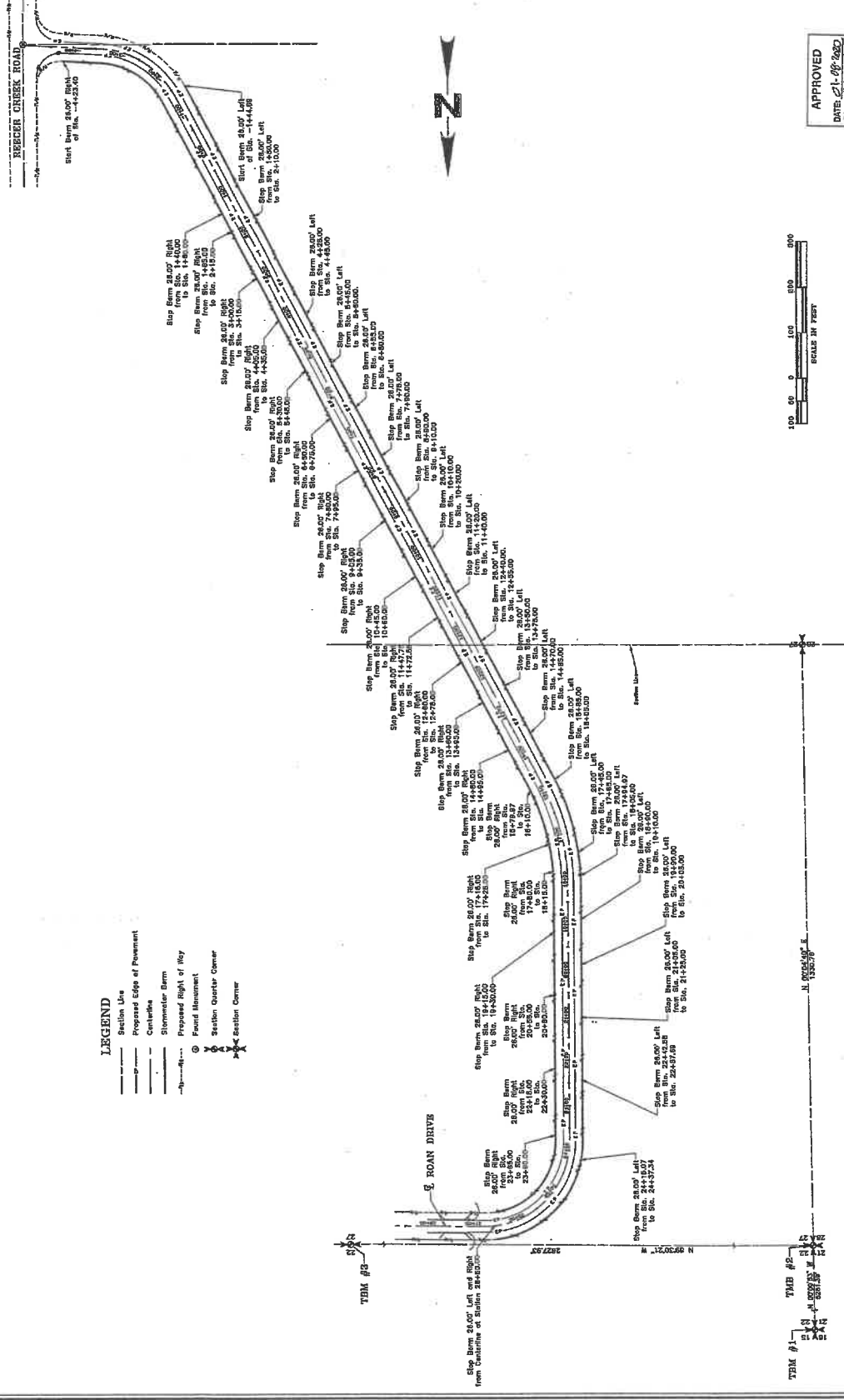
WESTERN PACIFIC
ENGINEERING & SURVEY
1329 E. Hunter Place, Suite 100, Westborough
MA 01581-1023 (508) 336-1234
Licenses in California and Massachusetts

No.	Description	Date	By

LCU, INC.
PALOMINO MAJOR PLAT, PHASE 2 & 3
ROAD DRIVE STORMWATER ALTERATIONS
Road Layout

Prepared by: [Signature]
Drawn by: [Signature]
Checked by: [Signature]
Project No.: 18110
Date: December 2019
Scale: 1" = 100'
Sheet: 1 of 1
Rev. 1, 18 11, 18 11

APPROVED
DATE: 01-08-2020
[Signature]
REGISTERED COUNTY ENGINEER



- LEGEND**
- Section Line
 - - - Proposed Edge of Pavement
 - - - Centerline
 - - - Stopmeter Berm
 - - - Proposed Right of Way
 - - - Faced Manurement
 - ⊙ Section Quarter Corner
 - ⊙ Section Corner

TM# #1
N 99°30'21" W
2877.87'
N 155°57'11" W
1552.71'

18110 - Project Name: 18110 Palomino Major Plat Phase 2 & 3 Stormwater Alterations

STORMWATER REPORT

PALOMINO MAJOR PLAT, PHASE II & III

LCU Inc.

Prepared by

WESTERN PACIFIC ENGINEERING and SURVEY

1328 E. Hunter Place
Moses Lake, Washington 98837
(509) 765-1023

WPES Project Number 18413
October 2019



October 18, 2019

LCU, Inc.
Attn: Pat Deneen
P.O. Box 394
Cle Elum, Washington 98922

SUBJECT: Revised Stormwater Report for Phase II and III of the Palomino Major Plat located in
Ellensburg, WA
WPES Project No. 18413

Dear Mr. Deneen:

Please find the attached revised Stormwater Report for Phase II and III of the Palomino Major Plat in Ellensburg, Washington. This revised report incorporates the feedback and current construction conditions as they exist on-site today. As you know, you will be required to follow all Washington Department of Ecology and Kittitas County Stormwater Standards during construction.

Thank you for allowing us to serve your engineering needs. If you have any questions concerning the attached report, please feel free to contact our office.

Sincerely,



Nathaniel D. Nofziger, P.E.
WESTERN PACIFIC ENGINEERING & SURVEY
1328 E. Hunter Place
Moses Lake, Washington 98837
(509) 765-1023



Proposed Development and Existing Site Conditions

The original scope of this project included the development of approximately thirty-five hundred feet of private roadway network to serve thirty-six new single-family residences. Broken out into three phases, each phase would deal with a specific area of the development. This revised report specifically relates to the second and third phases of the overall project. This revision is required due to the reclassification of the roadway from a private road network to a public network and the presence of additional underground utilities.

Current project scope for phases two and three includes the extension of Roan Drive from its current location until it terminates at Reecer Creek Road. The development is located approximately three miles northwest of downtown Ellensburg, Washington. The site can be accessed to the northwest from Bowers Road or from the southeast by Reecer Creek Road. More specifically, the site is located in the Northwest quarter of Section 27, Township 18 North, Range 18 East, W.M., on Kittitas County's Tax Parcel No. 491033

During the preliminary phases of this project, it was determined that the site experienced extremely high-water levels during the summer months. As such, the installation of traditional ditches and swales would be unfeasible. Without the ability to excavate for stormwater collection and infiltration, an elevated roadbed is the most reasonable solution to allow for grading and stormwater management.

In raising the grade of the road, stormwater will be able to run off the roadway and collect in constructed ditches. To accommodate the runoff from the roadway, areas outside the asphalt and compacted gravel shoulder will be left uncompacted to allow maximum infiltration capability. By minimizing compacted areas and allowing plant growth in these infiltration areas, the stormwater runoff will be able to properly infiltrate into the ground.

In the original design, the roadway was intended to be a private road. With this classification, the runoff from the roadway, driveways, and structures placed on each lot would need to have a stormwater collection system. Changing to a county road allows for only the stormwater running off from the roadway itself to be collected and stored. Each property will maintain their runoff on-site.

On October 17th, 2014, Budinger & Associates performed two shallow depth bores to determine soil classification and layer thickness. These bores were located to the west of the existing Bowers Road, approximately 100' and 400' respectively. These locations serve as the primary location for the Phase I development. Results from these tests are included in the appendix. This data indicates that primarily sands and gravels are present on site with a standing water table of five and a half feet or less at the time of boring.

On June 5th, 2018, Western Pacific Engineering and Survey was on site to dig test pits and collect soil samples representative of the native material found on site. The test pits were located in the vicinity of the bridge abutments. The soil conditions, drainage characteristics, and pertinent soil design information was gathered and analyzed for use within this report. The soil analysis, as well as a map showing locations of the test pits, can be found in the appendix.



The proposed development is classified as a low-use site as defined by the 2019 Stormwater Management Manual for Eastern Washington (SWMMEW). Roan Drive is a county road with an average daily traffic (ADT) count of less than 7,500 vehicles, categorizing it as a low-use site according to Table 5.22: Pollutant Loading Classifications for Solids, Metals, and Oil in Stormwater Runoff Directed to UIC Wells.

The natural topography is generally uniform in grade, sloping downward to the southwest. The surface of property is covered in a variety of native grasses. Within the boundaries of Phase III of this project, there is an abandoned irrigation ditch that runs east to west. This irrigation ditch is no longer in use and portions of it will be filled in as necessary. Other important features to note are Currier Creek, the Town Ditch, and their proximity to the site. The Town Ditch borders the eastern portion of the site and Currier Creek is located to the west.

Basin Analysis

After placement of new roadway, the original drainage flow will be disrupted due to the elevated roadbed design. All stormwater that lands within the established Right of Way (ROW) will be collected and stored until it is able to infiltrate. The native soils are somewhat permeable, but will have limited infiltration prior to the soils becoming saturated due to the high-water table. For areas outside the ROW, runoff will be similar to pre-construction conditions.

For this development it is important that the stormwater runoff from the roadway does not directly flow into Currier Creek, due to the potential for contaminants. To protect Currier Creek, construction means and methods shall be consistent with the Stormwater Management Manual for Eastern Washington. For the purpose of this stormwater management document, only the stormwater that lands within the Right of Way will be considered.

General Calculation Procedure

When computing the required infiltration and storage areas for the site, a number of design assumptions were made. These assumptions include: each lot would have its own driveway, approximately twenty feet wide, Roan Drive will be approximately twenty-six feet wide for the 3,250 feet long roadway, approximately twenty linear feet would be subtracted from effective ditch length for each utility cluster, and the infiltration rate is assumed to be zero feet per second to account for the high groundwater table and inability for native soils to infiltrate stormwater.

By quantifying the type of ground cover present on site, a more accurate representation of infiltration and storage is possible. The impervious area, consisting of the roadway and individual driveways, covers approximately 2.2 acres. The pervious cover, consisting of the ditches and shoulders along the roadway, adds an additional 1.3 acres. In accordance with the Kittitas County Code, the rainfall intensity and time of concentration from a 25-year storm were used. A rainfall volume of 1.6 inches, along with Type 1A hydrograph were used to analyze the volume of stormwater expected from the site.



According to the United States Department of Agriculture's (USDA) Soil Survey, the soils in the area have a Hydraulic Soil Group rating of C/D or better. Runoff Curve Number (CN) values can be pulled directly from Table 4.5.2, found in the Stormwater Management Manual for Eastern Washington, published by the Washington State Department of Ecology. For the impervious paved areas, the CN value is 98. For the previous areas, the CN value of 87 for open spaces with less than 50% grassy cover was used. This CN value was chosen as the infiltration areas are designed to be seeded with low-irrigation plants and may not assist in the infiltration of stormwater.

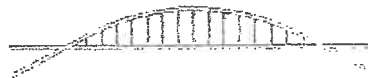
Based on the Budinger & Associates soil exploration data, project soils are classified as poorly graded clean gravels or gravel-sand mix (GP) according to Unified Soils Classification System with a hydraulic permeability of 0.01 feet per minute.

Based on our own research and soil sampling, the soils most closely resemble silty sands or poorly graded sand-silt mix (SM) with a hydraulic permeability of 5×10^{-5} feet per minute within the first foot of depth. For the remainder of the tests, for depths greater than a foot, the soils present have a higher hydraulic conductivity than the initial layer. As such, the lowest value will be used for calculations as it is the limited factor in stormwater infiltration. The data gathered by Western Pacific Engineering & Survey has been included in the appendix.

Lastly, by utilizing the United States Department of Agriculture's Web Soil Survey tool, a soil map encompassing the project site and the present soils with their respective engineering and physical properties was obtained. Using the median value for the topsoil infiltration rate returned a value of 0.0018 feet per second. Data sheets utilized to determine the soil type and infiltration rates are included in the appendix. To provide a factor of safety, an assumed infiltration rate of zero feet per second is used to determine the required 100-year storm storage capacity. As such, the required storage for a zero-infiltration scenario is the design standard.

Current earthwork design calls for a one-and-a-half-foot tall berm on the outside of the ditch and a two-foot berm on the inside of the ditch with a trough between them. This depression will contain the stormwater from the roadway. With a design infiltration value of zero feet per second, the required storage is 13,737 ft³. This amount of water equates to approximately 7.5" and 6.5" of standing water in the left and right ditches, respectively. While the right ditch accepts more runoff, it also has a longer effective length due to the super-elevated roadway, thereby giving it a lower standing depth. With 100-year storm during frozen ground conditions, the stormwater collection system is capable of impounding all runoff without the need for any infiltration. During typical, non-frozen conditions, a storage depth of 2" or less should be expected based on median infiltration rates.

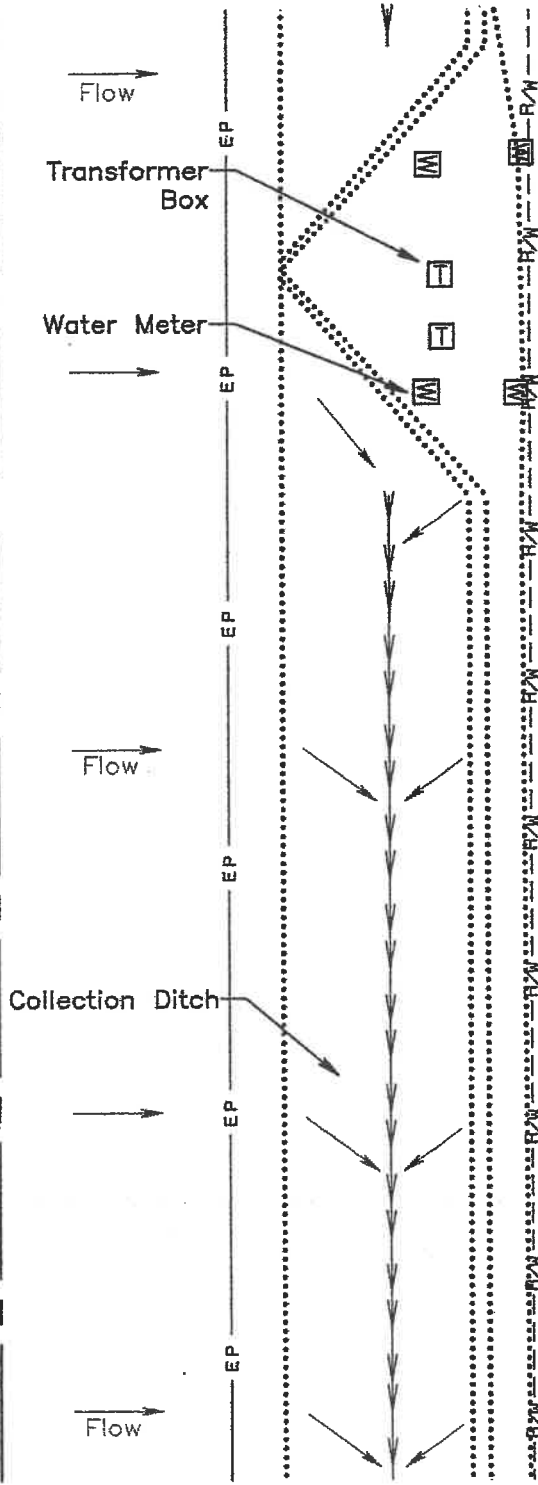
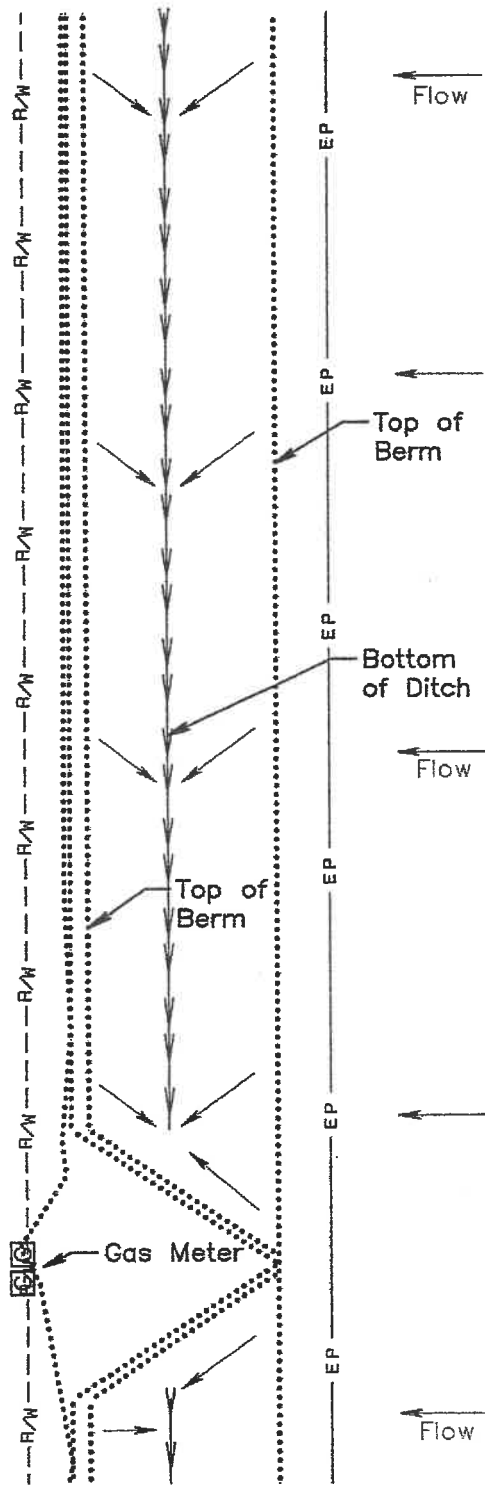
Taking all of the above information into consideration, it was determined that for an SCS Type 1A regional storm, the designed stormwater collection system is more than capable of handling the runoff from Roan Drive.



Appendices and Attachments

- Typical Layout Runoff Map
- Typical Roadway Cross-Section
- Budinger & Associates Soil Bore Data
- WPES Soil Classification
- USDA Soil Classification
- 25-Year Storm Map
- Stormwater Manual Hydrology Tables
- Infiltration Area Calculations
- Basin Runoff Calculations





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LCU, INC.
Palomino Flats Runoff Map
Typical Layout

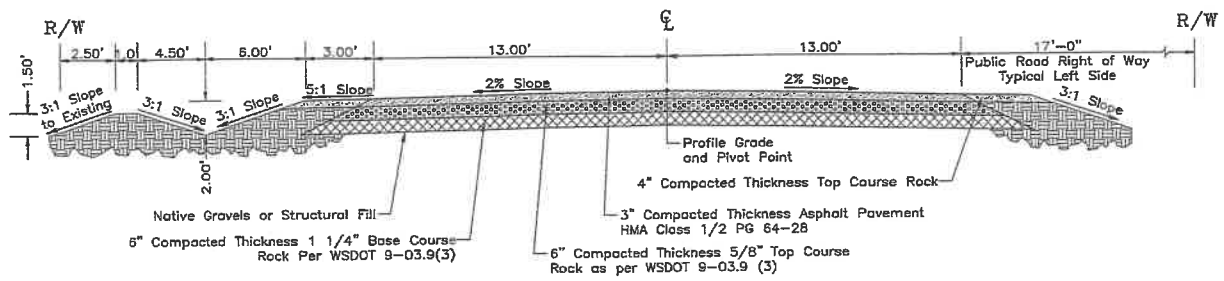
DRAWN BY: TSL
CHECKED BY: NDN

DATE:
October 9, 2019

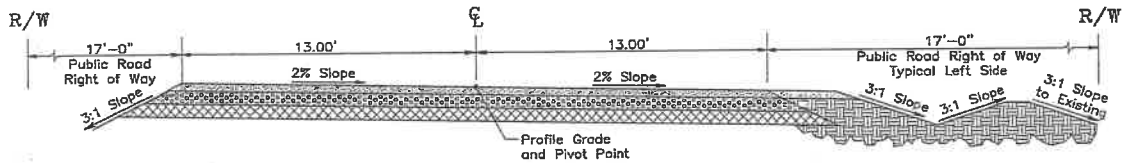
WPE PROJECT #:
18413

Scale: 1" = 10'
PLATE NO.: 01

TYPICAL ROADWAY SECTION



SUPER ROADWAY SECTION Sta. -4+23.40 to Sta. -1+44.69



WESTERN PACIFIC
ENGINEERING & SURVEYING
 A TRUST AGREEMENT BUSINESS CORPORATION
 1828 Buckley Place
 Modesto, CA 95230
 (509) 746-1023

No.	Revision	Date	By

LCU, INC.
PALOMINO FLATS DRAINAGE
 Typical Cross-Section
 Washington
 Kittitas County

Designed by NDN
 Drawn by Tml/TSL
 Checked by NDN
 Project No. 18613
 Date: October, 2019
 Scale:
 Hor. 1" = 40'
 Vert. 1" = 4'
 Sec 27, T 16 N, R 18 E

SHEET NO.
1 of 1

File: \\p:\projects\2019\Palomino Flats Drainage\Drawings\2019\18613\18613-1.dwg Date: 10/15/2019



● DCPT LOCATION

■ TEST PIT LOCATION



SCALE: 1"=200'

0 100 200



**Budinger
& Associates**

SITE PLAN

PALOMINO FIELDS PLAT
ELLENSBURG, WASHINGTON

FIGURE 1





PROJECT NUMBER S14484

DATE: 10/2014

TEST PIT 1

Date of Boring: 10-17-14
Driller: client
Type of Drill: Bobcat E42 Mini-excavator
Location: ~ 50 feet west of Reecer Creek Road at Bowers Road
Surface: sparse grass and weeds

Elevation: 100 ft
Logged by: T. Black
Size of hole: 5 ft by 10 ft

DEPTH	SAMPLES REQD. BLOW COUNTS N (% RECOVERY) <i>(blows/6" (itilics))</i>	MOISTURE, COLOR, CONDITION	DESCRIPTION	SOIL LOG	TEST RESULTS									
					ATTERBERG LIMITS PL ----- LL WATER CONTENT ○ STANDARD PEN TEST, N-VALUE (OBSERVED) ■ 3" SPLIT SPOON PENETRATION, BLOWS/FT ■									
0					10	20	30	40	50	60	70	80	90	
		moist, dark brown to brown, loose	SAND with Silt and Organics (roots)											
		moist, brown to reddish brown, loose to medium dense	GRAVEL with Sand and Cobbles, occasional Boulders, coarse, rounded											
5		saturated, gray, loose to medium dense	(free groundwater at 5 feet) GRAVEL with Sand, occasional Cobbles and Boulders, coarse, rounded End of Boring @ 5.5 ft											
10														

TEST PIT LWWWT S14484 TEST PIT LOGS.GPJ BUDINGER.GDT 10/23/14



Budinger & Associates
 3820 E. Broadway Ave.
 Spokane, WA 99202

TEST PIT LOGS FIGURE 3-1

Project: Palomino Road Extension
Location: Ellensburg, WA
Number: S14484

TEST PIT 2

Date of Boring: 10-17-14

Driller: client

Type of Drill: Bobcat E42 Mini-excavator

Location: ~ 400 feet west of Reecer Creek Road at Bowers Road

Surface: sparse grass and weeds

Elevation: 95 ft

Logged by: T. Black

Size of hole: 5 ft by 10 ft

DEPTH	SAMPLES REQD. BLOW COUNTS N (% RECOVERY) <i>(blows/6" (italics))</i>	MOISTURE, COLOR, CONDITION	DESCRIPTION	SOIL LOG	TEST RESULTS									
					ATTERBERG LIMITS PL ————— LL WATER CONTENT ○ STANDARD PEN TEST, N-VALUE (OBSERVED) ■ 3" SPLIT SPOON PENETRATION, BLOWS/FT ■									
0					10	20	30	40	50	60	70	80	90	
		moist, dark brown to brown, loose	SAND with Silt and Organics (roots)											
		moist, brown to reddish brown, loose to medium dense	GRAVEL with Sand and Cobbles, occasional Boulders, coarse, rounded											
			▽ (free groundwater at 4 feet)											
5		saturated, gray, loose to medium dense	GRAVEL with Sand, occasional Cobbles and Boulders, coarse, rounded											
			End of Boring @ 5 ft											
10														

TEST PIT L\WWW\T_S14484 TEST PIT LOGS.GPJ BUDINGER.GDT 10/23/14



Budinger & Associates
 3820 E. Broadway Ave.
 Spokane, WA 99202

TEST PIT LOGS FIGURE 3-2

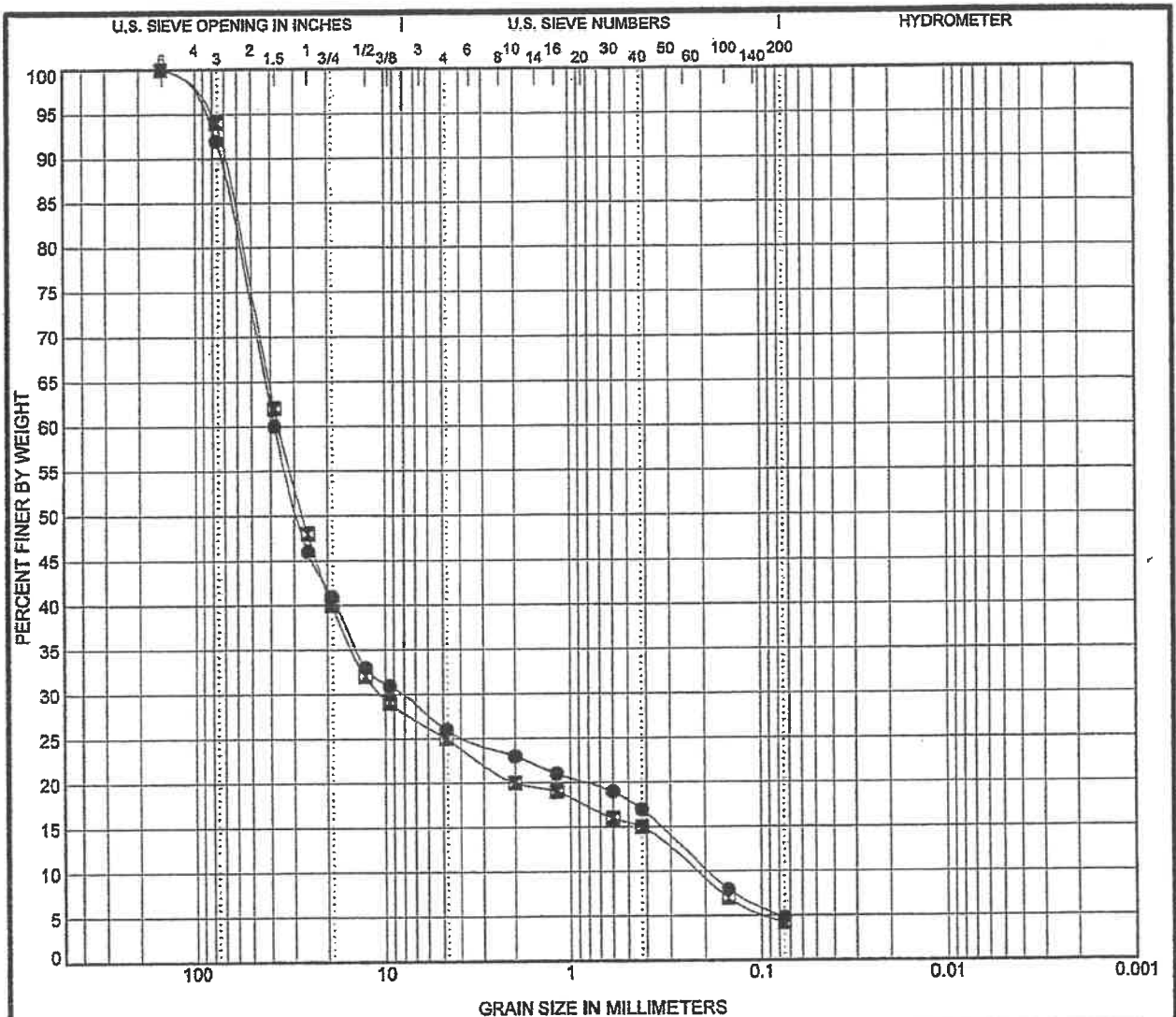
Project: Palomino Road Extension

Location: Ellensburg, WA

Number: S14484

**SOIL MECHANICS
LABORATORY SUMMARY**

LABORATORY NUMBER		Units	Test Methods	TEST PIT	TEST PIT
TEST PIT NUMBER				1	2
DEPTH	TOP	feet		1.0	1
	BOTTOM	feet		3.0	3
SAMPLE TYPE				Bulk	Bulk
MOISTURE		%	ASTM D2216	6.5	6.0
LIQUID LIMIT		%		27	28
PLASTIC LIMIT		%	ASTM D 4318	24	18
PLASTICITY INDEX		%		3	10
UNIFIED CLASSIFICATION			ASTM D 2487	GP	GP
	6"		ASTM D 422	100	100
	3"			92	94
S	1½"	%		60	62
I	1"			46	48
E	¾" GRAVEL	P		41	40
V	½"	A		33	32
E	⅜"	S		31	29
	#4	S		26	25
S	#10	I		23	20
I	#16	N		21	19
Z	#30 SAND	G		19	16
E	#40			17	15
	#100			8	7
	#200			4.8	4.2



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	Classification	LL	PL	PI	Cc	Cu		
● 1	1.0				9.56	200.95		
■ 2	1.0				13.77	161.84		
Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● 1	1.0	152.4	38	8.288	0.189	65.3	21.2	4.8
■ 2	1.0	152.4	35.875	10.465	0.222	68.3	20.7	4.2

U.S. GRAIN SIZE S14484 TEST PIT LOGS.GPJ BUDINGER.GOT 10/23/14



GRAIN SIZE DISTRIBUTION RESULTS

Project: Palomino Road Extension

Location: Ellensburg, WA

Number: S14484

FIGURE 6



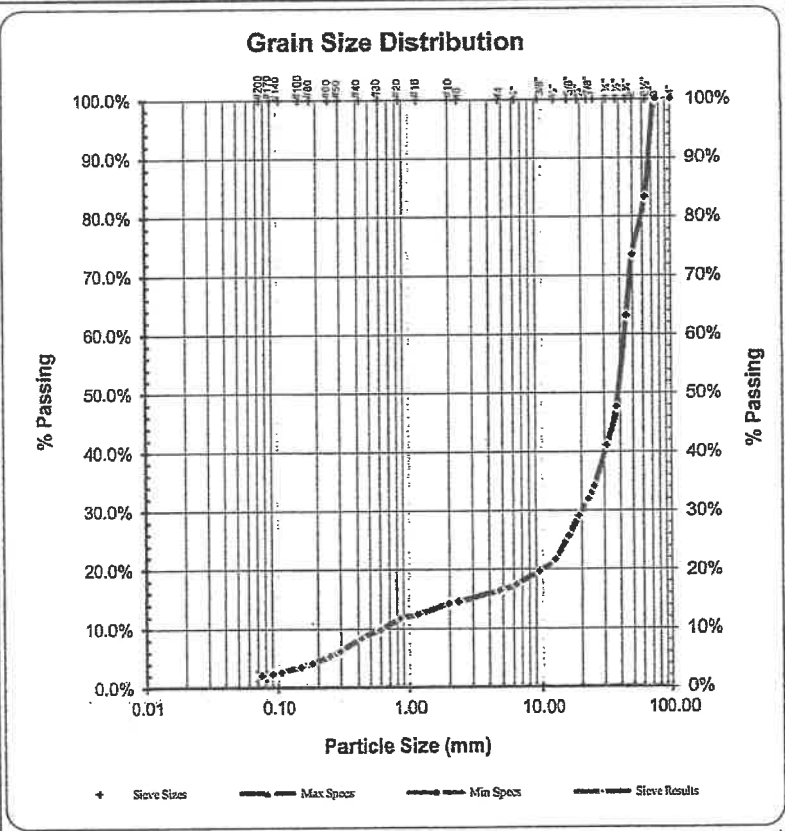
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 1328 E. Hunter Place, Moses Lake, Washington
 T: (509)765-1023 F: (509)765-1298



SIEVE ANALYSIS REPORT

Report To: LCU, Inc. Attn: Pat Deneen P.O. Box 394 Cle Elum, WA 98922	Date Sampled: 06/05/18 Date Received: 06/05/18 Date Tested: 06/07/18 Sampled By: WPE Sample Method: Test Pit	Project #: 18413 Sample #: 74 Source: On Site Description: T.P. #1 @ 6 ft
Specifications: No Specs Sample Meets Specs? n/a	ASTM D-2487 Unified Soils Classification System GP, Poorly graded Gravel	
Procedure: ASTM C136	$D_{10} = 0.623$ mm % Gravel = 83.5%	Coeff. of Curvature, C_c = 14.97
	$D_{30} = 20.135$ mm % Sand = 14.4%	Coeff. of Uniformity, C_u = 69.81
	$D_{60} = 43.489$ mm % Silt & Clay = 2.1%	Fineness Modulus = 7.41

Sieve Size	Metric	Actual	Interpolated	Specs	Specs
		Cumulative Percent Passing	Cumulative Percent Passing		
6.00"	150.00		100%		
4.00"	100.00		100%		
3.00"	75.00		100%		
2.50"	63.00	83%	83%		
2.00"	50.00	74%	74%		
1.75"	45.00		63%		
1.50"	37.50	48%	48%		
1.25"	31.50	41%	41%		
1.00"	25.00	34%	34%		
7/8"	22.40		32%		
3/4"	19.00	29%	29%		
5/8"	16.00		26%		
1/2"	12.50	22%	22%		
3/8"	9.50	20%	20%		
1/4"	6.30	17%	17%		
#4	4.75	16%	16%		
#8	2.360		15%		
#10	2.000	14%	14%		
#16	1.180		12%		
#20	0.850	12%	12%		
#30	0.600		10%		
#40	0.425	8%	8%		
#50	0.300		6%		
#60	0.250		5%		
#80	0.180	4%	4%		
#100	0.150		4%		
#140	0.106		3%		
#170	0.090		2%		
#200	0.075	2.1%	2.1%		



Technician: Jack Demont
 Engineer: Nathan Nofziger, P.E.

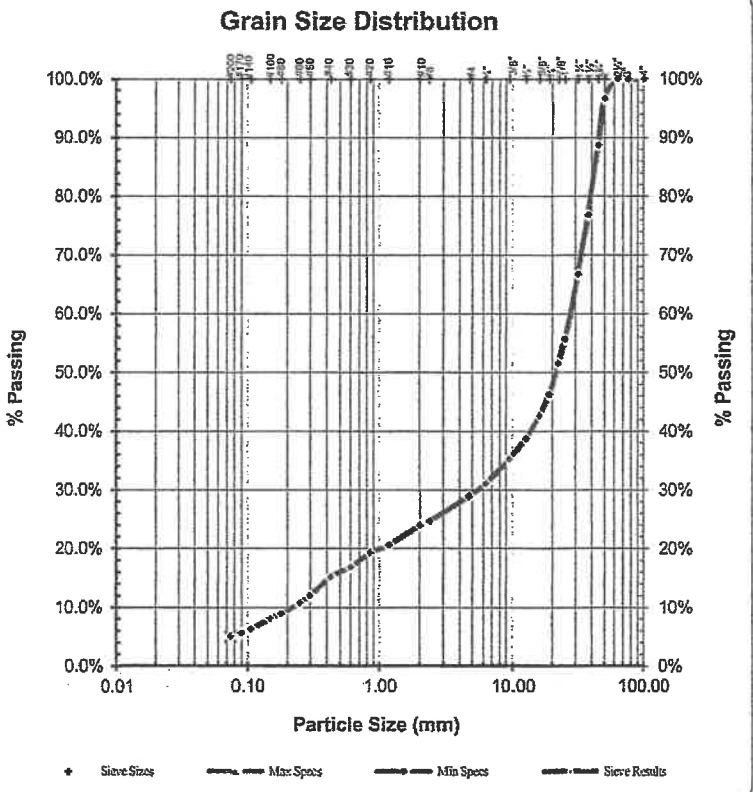
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SIEVE ANALYSIS REPORT

Report To: LCU, Inc Attn: Pat Deneen P.O. Box 394 Cle Elum, WA 98922		Date Sampled: 06/05/18 Date Received: 06/05/18 Date Tested: 06/08/18 Sampled By: WPE Sample Method: Test Pit		Project #: 18413 Sample #: 75 Source: On Site Description: T.P. #1 @ 4 ft	
Specifications: No Specs Sample Meets Specs ? n/a		ASTM D-2487 Unified Soils Classification System GP-GM, Poorly graded Gravel with Silt and Sand			
Procedure: ASTM C136		D ₁₀₀ = 0.223 mm % Gravel = 71.1% D ₃₀₀ = 5.501 mm % Sand = 23.9% D ₆₀₀ = 27.549 mm % Silt & Clay = 5.1%		Coeff. of Curvature, C _c = 4.93 Coeff. of Uniformity, C _u = 123.76 Fineness Modulus = 6.31	

Sieve Size		Actual Cumulative Percent Passing	Interpolated Cumulative Percent Passing	Specs Max	Specs Min
US	Metric				
6.00"	150.00		100%		
4.00"	100.00		100%		
3.00"	75.00		100%		
2.50"	63.00	100%	100%		
2.00"	50.00	97%	97%		
1.75"	45.00		89%		
1.50"	37.50	77%	77%		
1.25"	31.50	67%	67%		
1.00"	25.00	56%	56%		
7/8"	22.40		52%		
3/4"	19.00	46%	46%		
5/8"	16.00		43%		
1/2"	12.50	39%	39%		
3/8"	9.50	35%	35%		
1/4"	6.30	31%	31%		
#4	4.75	29%	29%		
#8	2.360		25%		
#10	2.000	24%	24%		
#16	1.180		21%		
#20	0.850	19%	19%		
#30	0.600		17%		
#40	0.425	15%	15%		
#50	0.300		12%		
#60	0.250		11%		
#80	0.180	9%	9%		
#100	0.150	8%	8%		
#140	0.106		6%		
#170	0.090		6%		
#200	0.075	5.1%	5.1%		

Grain Size Distribution



◆ Sieve Sizes
 — Max Specs
 — Min Specs
 — Sieve Results

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Technician: Jack Demont
Engineer: Nathan Nofziger, P.E.

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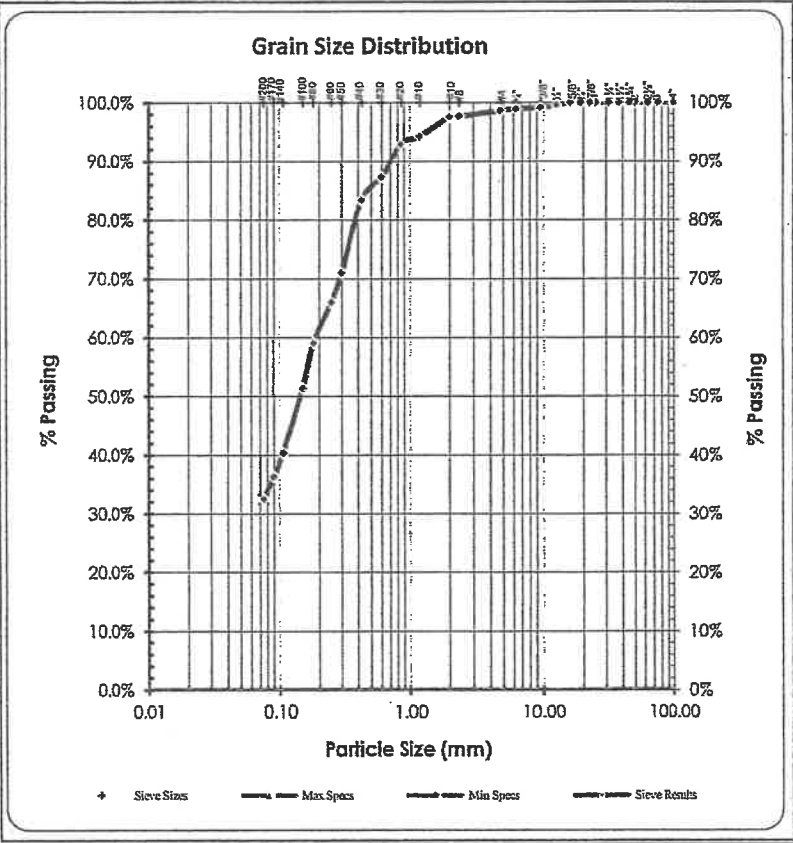
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 1328 E. Hunter Place, Moses Lake, Washington
 T: (509)765-1023 F: (509)765-1298



SIEVE ANALYSIS REPORT

Report To: LCU, Inc. Attn: Pat Deneen P.O. Box 394 Cle Elum, Washington 98922 Specifications: No Specs Sample Meets Specs ? n/a Procedure: ASTM C117 Method B	Date Sampled: 06/05/18 Date Received: 06/05/18 Date Tested: 06/08/18 Sampled By: WPE Sample Method: Manual Native ASTM: D-2487 Unified Soils Classification System SM: Silty Sand	Project #: 18413 Sample #: 76 Source: On-Site Description: T.P.# 1 @ 12" D₍₁₀₎ = 0.023 mm % Gravel = 1.4% Coeff. of Curvature, C_c = 1.10 D₍₃₀₎ = 0.069 mm % Sand = 66.1% Coeff. of Uniformity, C_u = 8.20 D₍₆₀₎ = 0.189 mm % Silt & Clay = 32.5% Fineness Modulus = 1.01
---	--	---

Sieve Size	US	Metric	Actual	Interpolated	Specs	Specs
			Cumulative Percent Passing	Cumulative Percent Passing		
6.00"		150.00		100%		
4.00"		100.00		100%		
3.00"		75.00		100%		
2.50"		63.00		100%		
2.00"		50.00		100%		
1.75"		45.00		100%		
1.50"		37.50		100%		
1.25"		31.50		100%		
1.00"		25.00		100%		
7/8"		22.40		100%		
3/4"		19.00		100%		
5/8"		16.00	100%	100%		
1/2"		12.50	100%	100%		
3/8"		9.50	99%	99%		
1/4"		6.30	99%	99%		
#4		4.75	99%	99%		
#8		2.360		98%		
#10		2.000	98%	98%		
#16		1.180		94%		
#20		0.850	93%	93%		
#30		0.600		87%		
#40		0.425	83%	83%		
#50		0.300		71%		
#60		0.250		66%		
#80		0.180	59%	59%		
#100		0.150		52%		
#140		0.106		40%		
#170		0.090		36%		
#200		0.075	32.5%	32.5%		



Technician: Jack Demont
 Engineer: Nathan Nofziger, P.E.

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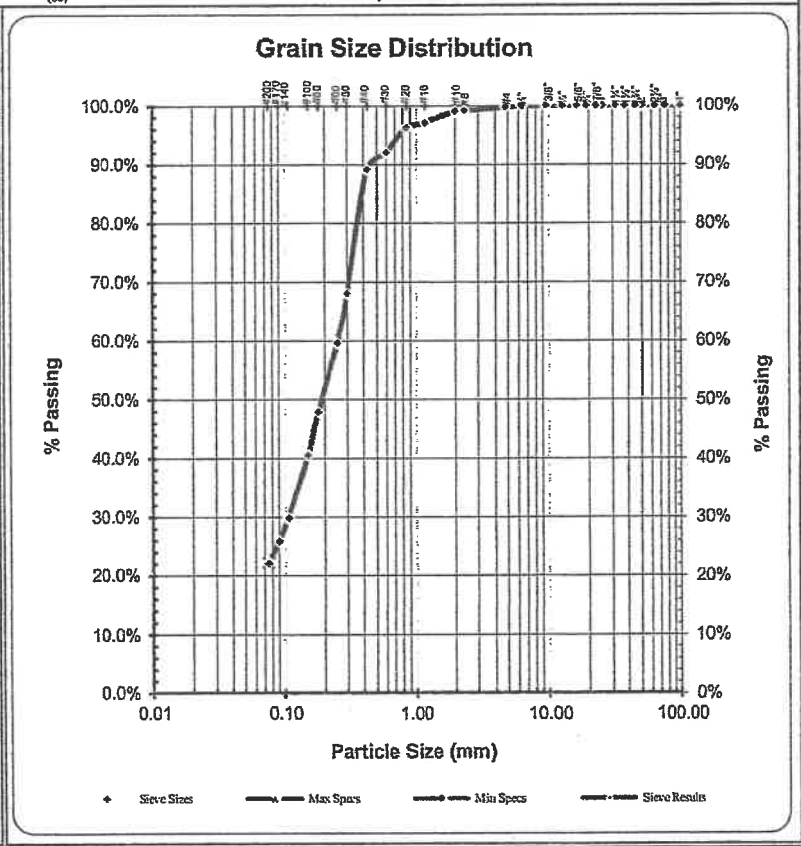
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 T: (509)765-1023 F: (509)765-1298



SIEVE ANALYSIS REPORT

Report To: LCU, Inc. Attn: Pat Deneen P.O. Box 394 Cle Elum, WA 98922	Date Sampled: 06/05/18 Date Received: 06/05/18 Date Tested: 06/06/18 Sampled By: WPE Sample Method: Test Pit	Project #: 18413 Sample #: 77 Source: On Site Description: T.P. #2 @ 6"
Specifications: No Specs Sample Meets Specs ? n/a		
Procedure: ASTM C136		
ASTM D-2487 Unified Soils Classification System: SM, Silty Sand		
D₍₁₀₎ = 0.034 mm	% Gravel = 0.2%	Coeff. of Curvature, C_c = 1.34
D₍₃₀₎ = 0.107 mm	% Sand = 77.5%	Coeff. of Uniformity, C_u = 7.49
D₍₆₀₎ = 0.252 mm	% Silt & Clay = 22.3%	Fineness Modulus = 1.03

Sieve Size	Actual Cumulative Percent Passing	Interpolated Cumulative Percent Passing		Specs Max	Specs Min
		Percent Passing	Percent Passing		
US	Metric				
6.00"	150.00		100%		
4.00"	100.00		100%		
3.00"	75.00		100%		
2.50"	63.00		100%		
2.00"	50.00		100%		
1.75"	45.00		100%		
1.50"	37.50		100%		
1.25"	31.50		100%		
1.00"	25.00		100%		
7/8"	22.40		100%		
3/4"	19.00		100%		
5/8"	16.00		100%		
1/2"	12.50		100%		
3/8"	9.50		100%		
1/4"	6.30	100%	100%		
#4	4.75	100%	100%		
#8	2.360		99%		
#10	2.000	99%	99%		
#16	1.180		97%		
#20	0.850	96%	96%		
#30	0.600		92%		
#40	0.425	89%	89%		
#50	0.300		68%		
#60	0.250		60%		
#80	0.180	48%	48%		
#100	0.150		41%		
#140	0.106		30%		
#170	0.090		26%		
#200	0.075	22.3%	22.3%		



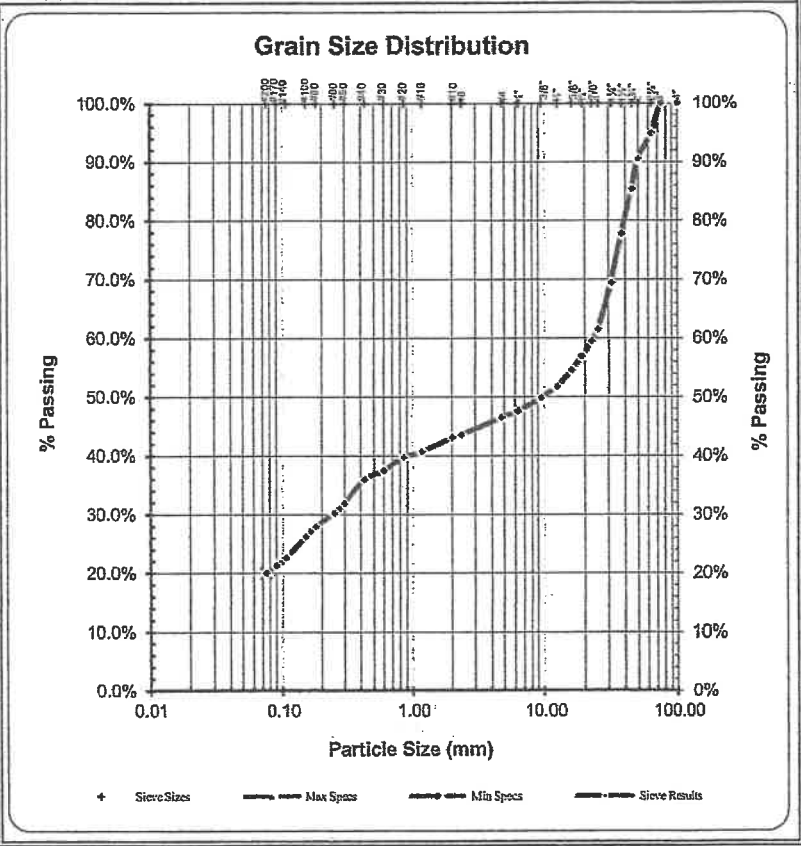
Technician: Jack Demont
 Engineer: Nathan Nofziger, P.E.

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SIEVE ANALYSIS REPORT

Report To: LCU, Inc. Attn: Pat Deneen P.O. Box 394 Cle Elum, WA 98922 Specifications: No Specs Sample Meets Specs ? n/a Procedure: ASTM C117 Method B	Date Sampled: 06/05/18 Date Received: 06/05/18 Date Tested: 06/08/18 Sampled By: WPE Sample Method: Test Pit ASTM D-2487 Unified Soils Classification System: GM, Silty Gravel with Sand	Project #: 18413 Sample #: 78 Source: On Site Description: T.P. #2 @ 3 ft D₍₁₀₎ = 0.037 mm % Gravel = 53.5% Coeff. of Curvature, C_c = 0.07 D₍₃₀₎ = 0.243 mm % Sand = 26.5% Coeff. of Uniformity, C_u = 616.12 D₍₆₀₎ = 23.057 mm % Silt & Clay = 20.0% Fineness Modulus = 4.89
---	--	--

Sieve Size		Actual Cumulative Percent Passing	Interpolated Cumulative Percent Passing	Specs Max	Specs Min
US	Metric	Percent Passing	Percent Passing		
6.00"	150.00		100%		
4.00"	100.00		100%		
3.00"	75.00	100%	100%		
2.50"	63.00	95%	95%		
2.00"	50.00	90%	90%		
1.75"	45.00		85%		
1.50"	37.50	78%	78%		
1.25"	31.50	69%	69%		
1.00"	25.00	61%	61%		
7/8"	22.40		60%		
3/4"	19.00	57%	57%		
5/8"	16.00		55%		
1/2"	12.50	52%	52%		
3/8"	9.50	50%	50%		
1/4"	6.30	48%	48%		
#4	4.75	47%	47%		
#8	2.360		44%		
#10	2.000	43%	43%		
#16	1.180		41%		
#20	0.850	40%	40%		
#30	0.600		37%		
#40	0.425	36%	36%		
#50	0.300		32%		
#60	0.250		30%		
#80	0.180	28%	28%		
#100	0.150	26%	26%		
#140	0.106		23%		
#170	0.090		21%		
#200	0.075	20.0%	20.0%		



Technician: Jack Demont
 Engineer: Nathan Nofziger, P.E.

These test results relate only to the items tested, and were obtained in-lab unless otherwise specified.
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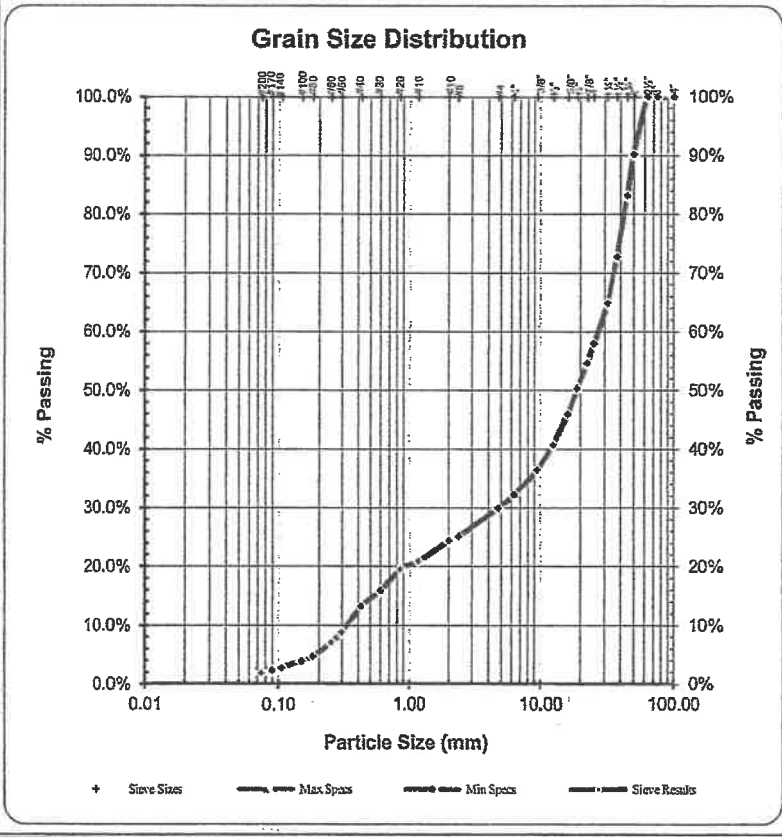
WESTERN PACIFIC ENGINEERING & SURVEY
 1328 E. Hunter Place, Moses Lake, Washington
 T: (509)765-1023 F: (509)765-1298



SIEVE ANALYSIS REPORT

Report To: LCU, Inc. Attn: Pat Deneen P.O. Box 394 Cle Elum, WA 98922	Date Sampled: 06/05/18 Date Received: 06/05/18 Date Tested: 06/08/18 Sampled By: WPE Sample Method: Tset Pit	Project #: 18413 Sample #: 79 Source: On Site Description: T.P. #2 @ 7 ft
Specifications: No Specs Sample Meets Specs ? n/a	ASTM D-2487 Unified Soils Classification System GW, Well-graded Gravel with Sand	
Procedure: ASTM C136	D₍₁₀₎ = 0.333 mm % Gravel = 70.1% D₍₃₀₎ = 4.819 mm % Sand = 28.0% D₍₆₀₎ = 26.996 mm % Silt & Clay = 1.9%	Coeff. of Curvature, C _c = 2.59 Coeff. of Uniformity, C _u = 81.19 Fineness Modulus = 6.36

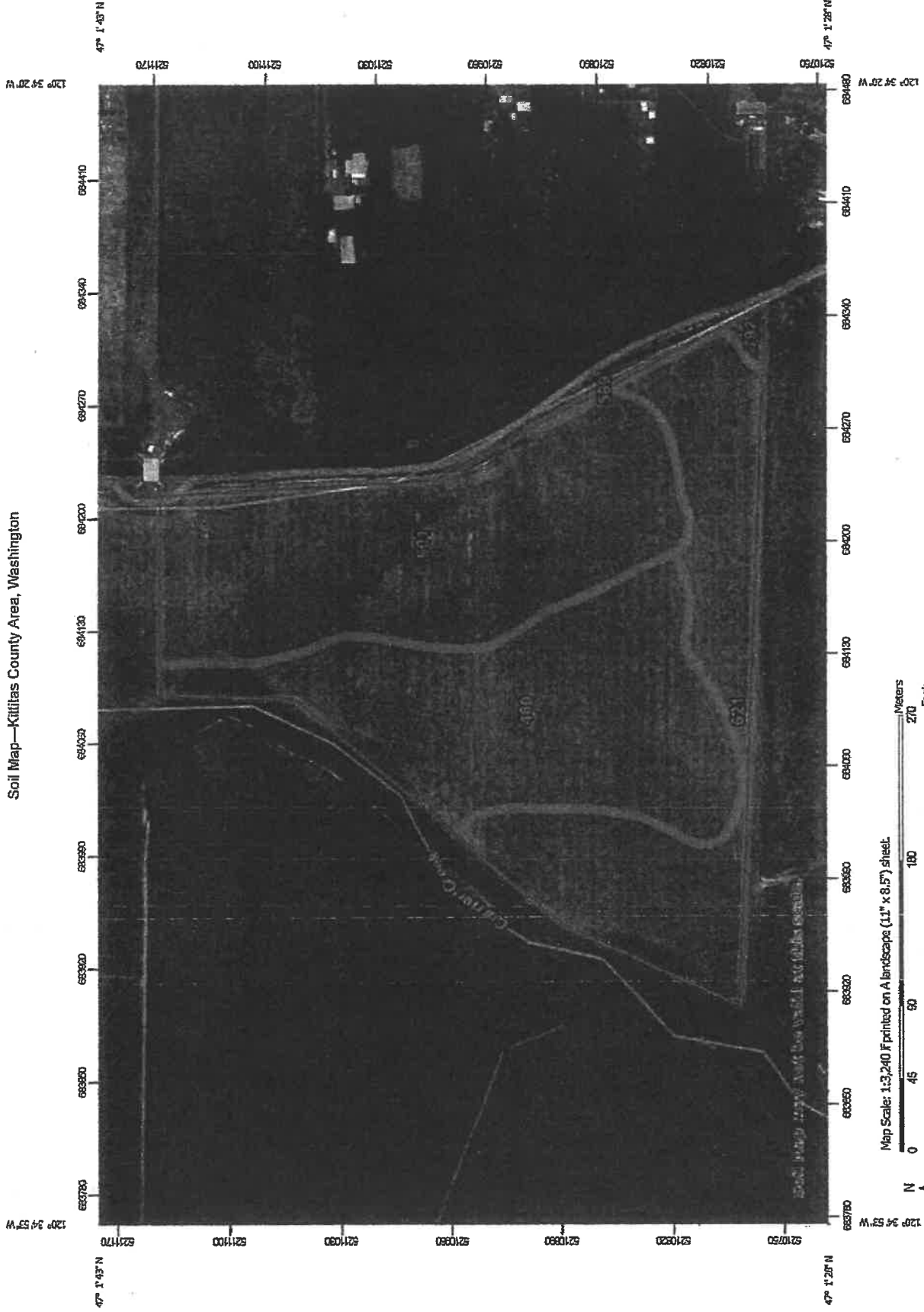
Sieve Size		Actual Cumulative Percent Passing	Interpolated Cumulative Percent Passing	Specs Max	Specs Min
US	Metric				
6.00"	150.00		100%		
4.00"	100.00		100%		
3.00"	75.00		100%		
2.50"	63.00		100%		
2.00"	50.00	90%	90%		
1.75"	45.00		83%		
1.50"	37.50	73%	73%		
1.25"	31.50	65%	65%		
1.00"	25.00	58%	58%		
7/8"	22.40		55%		
3/4"	19.00	50%	50%		
5/8"	16.00		46%		
1/2"	12.50	41%	41%		
3/8"	9.50	36%	36%		
1/4"	6.30	32%	32%		
#4	4.75	30%	30%		
#8	2.360		25%		
#10	2.000	24%	24%		
#16	1.180		21%		
#20	0.850	20%	20%		
#30	0.600		16%		
#40	0.425	13%	13%		
#50	0.300		9%		
#60	0.250		7%		
#80	0.180	5%	5%		
#100	0.150		4%		
#140	0.106		3%		
#170	0.090		2%		
#200	0.075	1.9%	1.9%		








































Technician: Jack Demont
 Engineer: Nathan Nofziger, P.E.

These test results relate only to the items tested, and were obtained in-lab unless otherwise specified.
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Soil Map—Kittitas County Area, Washington



MAP LEGEND

 Area of Interest (AOI)	 Spoil Area
 Soils	 Stony Spot
 Soil Map Unit Polygons	 Very Stony Spot
 Soil Map Unit Lines	 Wet Spot
 Soil Map Unit Points	 Other
Special Point Features	 Special Line Features
 Blowout	Water Features
 Borrow Pit	 Streams and Canals
 Clay Spot	Transportation
 Closed Depression	 Rails
 Gravel Pit	 Interstate Highways
 Gravelly Spot	 US Routes
 Landfill	 Major Roads
 Lava Flow	 Local Roads
 Marsh or swamp	Background
 Mine or Quarry	 Aerial Photography
 Miscellaneous Water	
 Perennial Water	
 Rock Outcrop	
 Saline Spot	
 Sandy Spot	
 Severely Eroded Spot	
 Sinkhole	
 Slide or Slip	
 Sodic Spot	

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL:
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Kittitas County Area, Washington
 Survey Area Data: Version 10, Sep 7, 2017

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 3, 2014—Sep 21, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
480	Nanum ashy loam, 0 to 2 percent slopes	7.9	34.5%
589	Nack-Brickmill complex, 0 to 5 percent slopes	0.1	0.2%
601	Brickmill gravelly ashy loam, 0 to 2 percent slopes	8.7	37.8%
621	Mitta ashy silt loam, flooded, 0 to 2 percent slopes	6.1	26.8%
792	Brickmill gravelly ashy loam, 0 to 5 percent slopes	0.2	0.7%
Totals for Area of Interest		22.9	100.0%

Physical Soil Properties

This table shows estimates of some physical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Particle size is the effective diameter of a soil particle as measured by sedimentation, sieving, or micrometric methods. Particle sizes are expressed as classes with specific effective diameter class limits. The broad classes are sand, silt, and clay, ranging from the larger to the smaller.

Sand as a soil separate consists of mineral soil particles that are 0.05 millimeter to 2 millimeters in diameter. In this table, the estimated sand content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Silt as a soil separate consists of mineral soil particles that are 0.002 to 0.05 millimeter in diameter. In this table, the estimated silt content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification.

The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, saturated hydraulic conductivity (K_{sat}), plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (oven-dry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at 1/3- or 1/10-bar (33kPa or 10kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute linear extensibility, shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. Depending on soil texture, a bulk density of more than 1.4 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Saturated hydraulic conductivity (Ksat) refers to the ease with which pores in a saturated soil transmit water. The estimates in the table are expressed in terms of micrometers per second. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Saturated hydraulic conductivity (Ksat) is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each soil layer. The capacity varies, depending on soil properties that affect retention of water. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Linear extensibility refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. It is an expression of the volume change between the water content of the clod at 1/3- or 1/10-bar tension (33kPa or 10kPa tension) and oven dryness. The volume change is reported in the table as percent change for the whole soil. The amount and type of clay minerals in the soil influence volume change.

Linear extensibility is used to determine the shrink-swell potential of soils. The shrink-swell potential is low if the soil has a linear extensibility of less than 3 percent; moderate if 3 to 6 percent; high if 6 to 9 percent; and very high if more than 9 percent. If the linear extensibility is more than 3, shrinking and swelling can cause damage to buildings, roads, and other structures and to plant roots. Special design commonly is needed.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In this table, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter. The content of organic matter in a soil can be maintained by returning crop residue to the soil.

Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms.

Erosion factors are shown in the table as the K factor (Kw and Kf) and the T factor. Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and Ksat. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor Kw indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Erosion factor Kf indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind and/or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are described in the "National Soil Survey Handbook."

Wind erodibility index is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion. There is a close correlation between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion.

Reference:

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. (<http://soils.usda.gov>)

Report—Physical Soil Properties

Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

Physical Soil Properties—Kittitas County Area, Washington														
Map symbol and soil name	Depth In	Sand Pct	Silt Pct	Clay Pct	Moist bulk density g/cc	Saturated hydraulic conductivity micro m/sec	Available water capacity In/in	Linear extensibility Pct	Organic matter Pct	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
480—Nanum ashy loam, 0 to 2 percent slopes														
Nanum	0-8	-39-	-37-	22-25- 27	1.15-1.28 -1.40	4.00-9.00-14.00	0.17-0.19-0.20	0.0- 1.5- 2.9	2.0- 3.5- 5.0	.24	.24	3	5	56
	8-15	-38-	-36-	25-26- 33	1.15-1.28 -1.40	1.40-3.00-4.00	0.17-0.19-0.20	3.0- 4.5- 5.9	2.0- 3.5- 5.0	.28	.28			
	15-28	-35-	-34-	27-31- 35	1.15-1.28 -1.40	1.40-3.00-4.00	0.15-0.18-0.20	3.0- 4.5- 5.9	1.0- 1.5- 2.0	.28	.28			
	28-35	-35-	-34-	27-31- 35	1.25-1.33 -1.40	1.40-3.00-4.00	0.08-0.10-0.11	3.0- 4.5- 5.9	1.0- 1.5- 2.0	.10	.28			
	35-60	-55-	-14-	27-31- 35	1.25-1.33 -1.40	1.40-3.00-4.00	0.07-0.09-0.10	3.0- 4.5- 5.9	0.0- 1.0- 2.0	.02	.20			

Physical Soil Properties—Kititas County Area, Washington

Physical Soil Properties—Kititas County Area, Washington														
Map symbol and soil name	Depth In	Sand Pct	Silt Pct	Clay Pct	Moist bulk density g/cc	Saturated hydraulic conductivity micro m/sec	Available water capacity in/in	Linear extensibility Pct	Organic matter Pct	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
589—Nack-Brickmill complex, 0 to 5 percent slopes														
Nack	0-6	-41-	-37-	16-22-25	1.15-1.28 -1.40	4.00-9.00-14.00	0.11-0.13-0.15	0.0-1.5-2.9	2.0-3.0-4.0	.15	.24	2	6	48
	6-15	-35-	-38-	25-28-30	1.15-1.28 -1.40	1.40-3.00-4.00	0.11-0.14-0.16	3.0-4.5-5.9	1.0-2.0-3.0	.32	.32			
	15-60	-53-	-12-	25-35-40	1.30-1.40 -1.50	1.40-3.00-4.00	0.04-0.06-0.08	3.0-4.5-5.9	1.0-1.5-2.0	.02	.17			
Brickmill	0-12	-43-	-40-	15-18-20	1.15-1.28 -1.40	4.00-9.00-14.00	0.07-0.09-0.11	0.0-1.5-2.9	1.0-2.0-3.0	.15	.28	3	5	56
	12-28	-67-	-15-	15-18-20	1.30-1.40 -1.50	4.00-9.00-14.00	0.05-0.08-0.11	0.0-1.5-2.9	0.5-1.3-2.0	.05	.20			
	28-38	-66-	-15-	15-19-25	1.30-1.40 -1.50	4.00-9.00-14.00	0.05-0.08-0.10	0.0-1.5-2.9	0.5-0.8-1.0	.02	.20			
	38-49	-67-	-20-	12-14-15	1.30-1.40 -1.50	4.00-9.00-14.00	0.05-0.08-0.10	0.0-1.5-2.9	0.5-0.8-1.0	.05	.24			
	49-60	-84-	-11-	0-5-10	1.40-1.48 -1.55	42.00-92.00-141.00	0.03-0.04-0.04	0.0-1.5-2.9	0.0-0.3-0.5	.02	.15			

Physical Soil Properties—Kittitas County Area, Washington

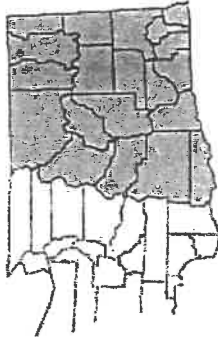
Physical Soil Properties—Kittitas County Area, Washington														
Map symbol and soil name	Depth In	Sand Pct	Silt Pct	Clay Pct	Moist bulk density g/cc	Saturated hydraulic conductivity micro m/sec	Available water capacity in/in	Linear extensibility Pct	Organic matter Pct	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
601—Brickmill gravely ash loam, 0 to 2 percent slopes	0-12	-43-	-40-	15-18-20	1.15-1.28 -1.40	4.00-9.00-14.00	0.07-0.09-0. 11	0.0-1.5-2.9	1.0-2.0- 3.0	.15	.28	3	5	56
Brickmill	12-28	-67-	-15-	15-18-20	1.30-1.40 -1.50	4.00-9.00-14.00	0.05-0.08-0. 11	0.0-1.5-2.9	0.5-1.3- 2.0	.05	.20			
	28-38	-66-	-15-	15-19-25	1.30-1.40 -1.50	4.00-9.00-14.00	0.05-0.08-0. 10	0.0-1.5-2.9	0.5-0.8- 1.0	.02	.20			
	38-49	-67-	-20-	12-14-15	1.30-1.40 -1.50	4.00-9.00-14.00	0.05-0.08-0. 10	0.0-1.5-2.9	0.5-0.8- 1.0	.05	.24			
	49-60	-84-	-11-	0-5-10	1.40-1.48 -1.55	42.00-92.00-14 1.00	0.03-0.04-0. 04	0.0-1.5-2.9	0.0-0.3- 0.5	.02	.15			
621—Mitka ashy silt loam, flooded, 0 to 2 percent slopes	0-5	-7-	-70-	19-23-25	1.00-1.15 -1.30	4.00-9.00-14.00	0.19-0.20-0. 21	0.0-1.5-2.9	3.0-4.0- 5.0	.32	.32	5	5	56
Mitka, flooded	6-15	-7-	-70-	19-23-25	1.00-1.15 -1.30	4.00-9.00-14.00	0.19-0.20-0. 21	0.0-1.5-2.9	2.0-3.5- 5.0	.37	.37			
	15-34	-7-	-70-	19-23-25	1.00-1.15 -1.30	4.00-9.00-14.00	0.19-0.20-0. 21	0.0-1.5-2.9	1.0-1.5- 2.0	.49	.49			
	34-49	-9-	-64-	25-28-30	1.15-1.28 -1.40	1.40-3.00-4.00	0.17-0.19-0. 21	3.0-4.5-5.9	0.5-1.3- 2.0	.43	.43			
	49-60	-9-	-64-	25-28-30	1.25-1.33 -1.40	1.40-3.00-4.00	0.17-0.19-0. 21	3.0-4.5-5.9	0.0-0.3- 0.5	.49	.49			

Physical Soil Properties—Kittitas County Area, Washington														
Map symbol and soil name	Depth In	Sand Pct	Silt Pct	Clay Pct	Moist bulk density g/cc	Saturated hydraulic conductivity micro m/sec	Available water capacity In/In	Linear extensibility Pct	Organic matter Pct	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
792—Brickmill gravelly ashly loam, 0 to 5 percent slopes														
Brickmill	0-12	-43-	-40-	15-18-20	1.15-1.28 -1.40	4.00-9.00-14.00	0.07-0.09-0.11	0.0-1.5-2.9	1.0-2.0-3.0	.15	.28	3	5	56
	12-28	-67-	-15-	15-18-20	1.30-1.40 -1.50	4.00-9.00-14.00	0.05-0.08-0.11	0.0-1.5-2.9	0.5-1.3-2.0	.05	.20			
	28-38	-66-	-15-	15-19-25	1.30-1.40 -1.50	4.00-9.00-14.00	0.05-0.08-0.10	0.0-1.5-2.9	0.5-0.8-1.0	.02	.20			
	38-49	-67-	-20-	12-14-15	1.30-1.40 -1.50	4.00-9.00-14.00	0.05-0.08-0.10	0.0-1.5-2.9	0.5-0.8-1.0	.05	.24			
	49-50	-84-	-11-	0-5-10	1.40-1.48 -1.55	42.00-92.00-141.00	0.03-0.04-0.04	0.0-1.5-2.9	0.0-0.3-0.5	.02	.15			

Data Source Information

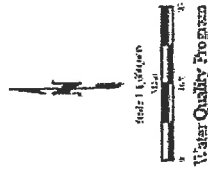
Soil Survey Area: Kittitas County Area, Washington
 Survey Area Data: Version 10, Sep 7, 2017

Eastern Washington Stormwater Manual

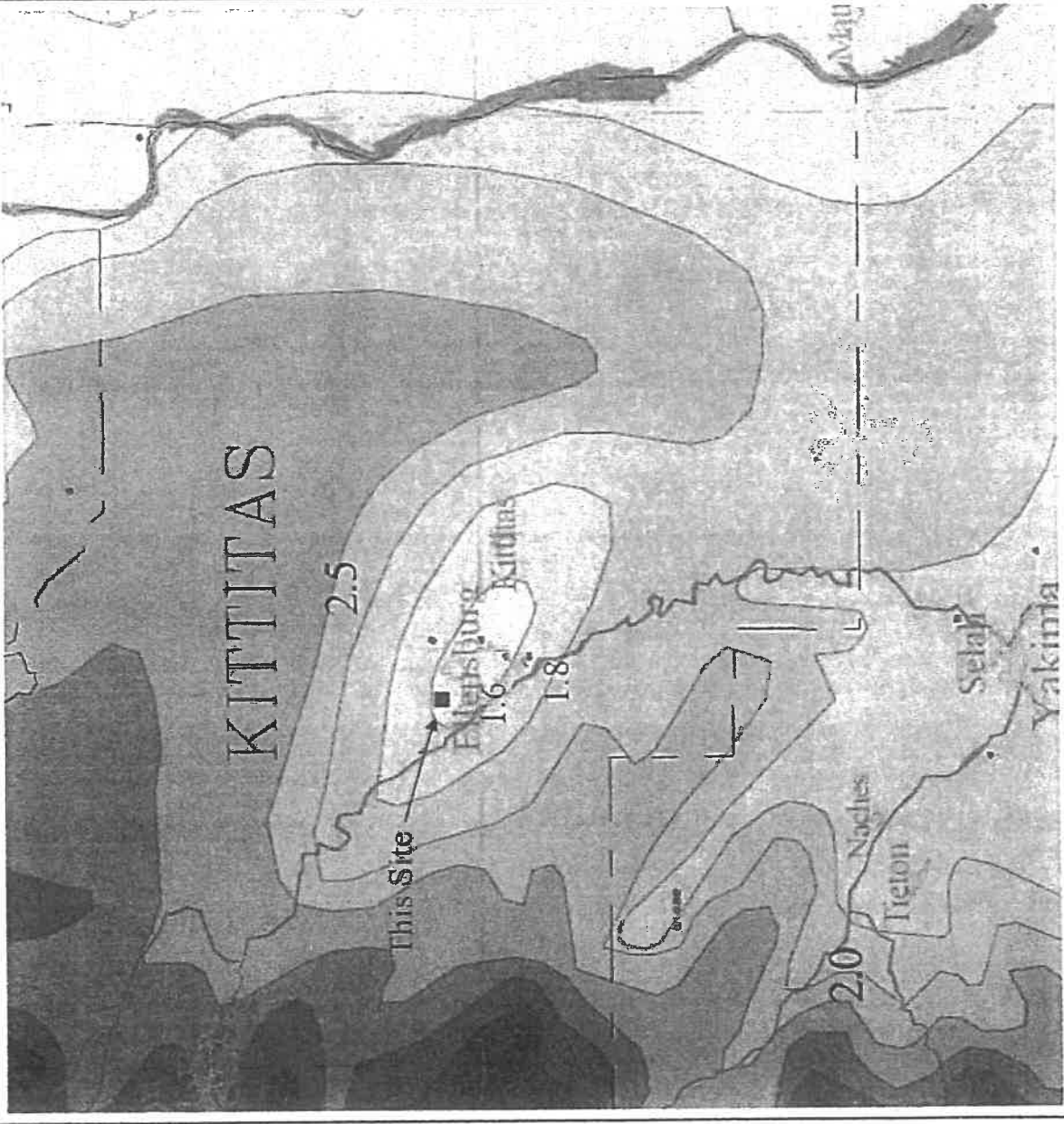


25-Year 24-Hour Isopleth
Source: NOAA Atlas 2, Volume IX, 1973
Precipitation in inches

County (2009, 1:24,000)
City (2003, 1:24,000)
Latitude/Longitude (1/10 degree)
Isopleth (1973, 1:2,000,000)
NOAA/NWS Station (1931-1998)



WASHINGTON STATE
DEPARTMENT OF
E C O L O G Y
GIS Technical Services
03/25/04
Figure_13.5



High ground water or shallow bedrock can cause a significant increase in runoff. If either of these conditions exists, it needs to be addressed by the designer. For a more complete discussion of computing weighted CN values, see *Urban Hydrology for Small Watersheds* (USDA, 1986).

Table 4.14: Runoff Curve Numbers (CNs) for Selected Agricultural, Suburban, and Urban Areas

Cover type and hydrologic condition	CNs for hydrologic soil group			
	A	B	C	D
Open space (lawns, parks, golf courses, cemeteries, landscaping, etc.)^a				
Poor condition (grass cover <50% of the area)	68	79	86	89
Fair condition (grass cover on 50% to 75% of the area)	49	69	79	84
Good condition (grass cover on >75% of the area)	39	61	74	80
Impervious areas				
Open water bodies: lakes, wetlands, ponds etc.	100	100	100	100
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)	98	98	98	98
Permeable pavers and permeable interlocking concrete (assumed as 85% impervious and 15% lawn)				
Fair lawn condition (weighted average CNs)	95	96	97	97
Gravel (including right-of-way)	76	85	89	91
Dirt (including right-of-way)	72	82	87	89
Pasture, grassland, or range-continuous forage for grazing				
Poor condition (ground cover <50% or heavily grazed with no mulch)	68	79	86	89
Fair condition (ground cover 50% to 75% and not heavily grazed)	49	69	79	84
Good condition (ground cover >75% and lightly or only occasionally grazed)	39	61	74	80
Cultivated agricultural lands				
Row Crops (good) e.g., corn, sugar beets, soy beans	64	75	82	85
Small Grain (good) e.g., wheat, barley, flax	60	72	80	84
Meadow				
Continuous grass, protected from grazing and generally mowed for hay	30	58	71	78
Brush (brush-weed-grass mixture with brush the major element)				

Table 4.14: Runoff Curve Numbers (CNs) for Selected Agricultural, Suburban, and Urban Areas (continued)

Cover type and hydrologic condition	CNs for hydrologic soil group			
	A	B	C	D
Poor (<50% ground cover)	48	67	77	83
Fair (50% to 75% ground cover)	35	56	70	77
Good (>75% ground cover)	30 ^b	48	65	73
Woods-grass combination (orchard or tree farm)^c				
Poor	57	73	82	86
Fair	43	65	76	82
Good	32	58	72	79
Woods				
Poor (Forest litter, small trees, and brush destroyed by heavy grazing or regular burning)	45	66	77	83
Fair (Woods are grazed but not burned, and some forest litter covers the soil)	36	60	73	79
Good (Woods are protected from grazing, and litter and brush adequately cover the soil)	30	55	70	77
Herbaceous (mixture of grass, weeds, and low-growing brush, with brush the minor element)				
Poor (<30% ground cover)	n/a ^d	80	87	93
Fair (30% to 70% ground cover)		71	81	89
Good (>70% ground cover)		62	74	85
Sagebrush with grass understory				
Poor (<30% ground cover)	n/a ^d	67	80	85
Fair (30% to 70% ground cover)		51	63	70
Good (>70% ground cover)		35	47	55
^a Composite CNs may be computed for other combinations of open space cover type. ^b Actual CN is < 30; use CN = 30 for runoff computations. ^c The indicated CNs were computed for areas with 50% woods and 50% grass (pasture) cover. Other combinations of conditions may be computed from the CNs for woods and pasture. ^d CNs have not been developed for hydrologic soil group A.				

Stormwater Area Calcs - Left Ditch

Length of Roadway	3250 ft
Width of Roadway	13 ft
Lots Left	24 units
Width of Driveway	20 ft
Left Ditch Length	2110.0 ft
Shoulder Width	3 ft
Ditch Right Width	6 ft
Ditch Left Width	4.5 ft

Impervious Area	48730 sq. ft.	1.118 ac
Pervious Area	28485 sq. ft.	0.654 ac
Total Area	77215 sq. ft.	1.772 ac

Infiltration Area	6330 sq. ft.
Storage Volume	527.5 cu. ft.
Assumed Depth	2 inches

Stormwater Area Calcs - Right Ditch

Length of Roadway	3250 ft
Width of Roadway	13 ft
Lots Right	22 units
Width of Driveway	20 ft
Right Ditch Length	2410.0 ft
Shoulder Width	3 ft
Ditch Right Width	6 ft
Ditch Left Width	4.5 ft

Impervious Area	48190 sq. ft.	1.106 ac
Pervious Area	32535 sq. ft.	0.747 ac
Total Area	80725 sq. ft.	1.852 ac

Infiltration Area	7230 sq. ft.
Storage Volume	602.5 cu. ft.
Assumed Depth	2 inches

SCS Type 1A Regional Storm - Central Basin
Stormwater Runoff Area - Left Ditch

Area (acres) = 1.772 P (inches) = 1.6 d_c (min) = 6 T_c (min) = 5 Infiltration Area (ft²) = 6330.0
 W₂ = 0.375 Max Storage (cu. ft.) = 556.6
 Pervious Area (acres) = 0.694 CN = 87 S = 1.49 0.2S = 0.30 Infiltration Rate (cf/min/ft²) = 0.0019
 Impervious Area (acres) = 1.118 CN = 98 S = 0.20 0.2S = 0.04 Total Disp = 68.364000

1	2.0	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Time	Time	Time	Rainfall	Incremental	Accum.	Pervious	Pervious	Impervious	Impervious	Total	Instant	Design	Incremental	Drywell	Accum.	
Increment	Hours	(min)	Distribution (Fraction)	Rainfall (inches)	Rainfall (inches)	Acc. Run (inches)	Inc. Run (inches)	Acc. Run (inches)	Inc. Run (inches)	Runoff (inches)	Flow (inches)	Flow Rate (cfs)	Flow (cf)	Disp. Volume (cf)	Storage (cf)	
1	0.0	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0	
2	0.1	6	0.002	0.003	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0	
3	0.2	12	0.002	0.003	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0	
4	0.3	18	0.002	0.003	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0	
5	0.4	24	0.002	0.003	0.013	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0	
6	0.5	30	0.002	0.003	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0	
7	0.6	36	0.002	0.003	0.019	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0	
8	0.7	42	0.002	0.003	0.022	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0	
9	0.8	48	0.002	0.003	0.026	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0	
10	0.9	54	0.002	0.003	0.029	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0	
11	1.0	60	0.002	0.003	0.032	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0	
12	1.1	66	0.003	0.005	0.037	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0	
13	1.2	72	0.003	0.005	0.042	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0046	0.0	
14	1.3	78	0.003	0.005	0.046	0.000	0.000	0.000	0.000	0.000	0.002	0.001	0.2	0.2274	0.0	
15	1.4	84	0.003	0.005	0.051	0.000	0.000	0.001	0.000	0.000	0.000	0.004	0.002	0.8	0.8174	0.0
16	1.5	90	0.003	0.005	0.056	0.000	0.000	0.001	0.001	0.000	0.006	0.004	1.6	1.5782	0.0	
17	1.6	96	0.003	0.005	0.061	0.000	0.000	0.002	0.001	0.000	0.008	0.007	2.3	2.3419	0.0	
18	1.7	102	0.003	0.005	0.066	0.000	0.000	0.003	0.001	0.001	0.010	0.009	3.1	3.0697	0.0	
19	1.8	108	0.003	0.005	0.070	0.000	0.000	0.004	0.001	0.001	0.012	0.010	3.8	3.7552	0.0	
20	1.9	114	0.003	0.005	0.075	0.000	0.000	0.005	0.001	0.001	0.014	0.012	4.4	4.3994	0.0	
21	2.0	120	0.003	0.005	0.080	0.000	0.000	0.006	0.001	0.001	0.015	0.014	5.0	5.0049	0.0	
22	2.1	126	0.003	0.005	0.085	0.000	0.000	0.008	0.001	0.001	0.017	0.015	5.6	5.5748	0.0	
23	2.2	132	0.003	0.005	0.090	0.000	0.000	0.009	0.002	0.001	0.018	0.017	6.1	6.1116	0.0	
24	2.3	138	0.004	0.006	0.096	0.000	0.000	0.012	0.002	0.001	0.026	0.021	7.5	7.5348	0.0	
25	2.4	144	0.003	0.005	0.101	0.000	0.000	0.014	0.002	0.001	0.021	0.023	8.3	8.2970	0.0	
26	2.5	150	0.003	0.005	0.106	0.000	0.000	0.016	0.002	0.001	0.022	0.022	8.0	7.9550	0.0	
27	2.6	156	0.003	0.005	0.110	0.000	0.000	0.018	0.002	0.001	0.023	0.023	8.2	8.1785	0.0	
28	2.7	162	0.003	0.005	0.115	0.000	0.000	0.020	0.002	0.001	0.025	0.024	8.5	8.5272	0.0	
29	2.8	168	0.004	0.006	0.122	0.000	0.000	0.023	0.003	0.002	0.034	0.028	10.1	10.0704	0.0	
30	2.9	174	0.003	0.005	0.126	0.000	0.000	0.025	0.002	0.001	0.027	0.030	10.8	10.7615	0.0	
31	3.0	180	0.003	0.005	0.131	0.000	0.000	0.026	0.002	0.002	0.028	0.028	10.0	10.0463	0.0	
32	3.1	186	0.003	0.005	0.136	0.000	0.000	0.030	0.003	0.002	0.029	0.028	10.1	10.1021	0.0	
33	3.2	192	0.003	0.005	0.141	0.000	0.000	0.033	0.003	0.002	0.029	0.029	10.3	10.3395	0.0	
34	3.3	198	0.003	0.005	0.146	0.000	0.000	0.036	0.003	0.002	0.030	0.029	10.6	10.6118	0.0	
35	3.4	204	0.004	0.006	0.152	0.000	0.000	0.039	0.004	0.002	0.041	0.034	12.3	12.2923	0.0	
36	3.5	210	0.003	0.005	0.157	0.000	0.000	0.042	0.003	0.002	0.032	0.036	12.9	12.9369	0.0	
37	3.6	216	0.003	0.005	0.162	0.000	0.000	0.045	0.003	0.002	0.032	0.033	11.9	11.9030	0.0	
38	3.7	222	0.004	0.006	0.168	0.000	0.000	0.049	0.004	0.002	0.044	0.037	13.3	13.3251	0.0	
39	3.8	228	0.004	0.006	0.174	0.000	0.000	0.053	0.004	0.003	0.045	0.043	15.4	15.4151	0.0	
40	3.9	234	0.003	0.005	0.179	0.000	0.000	0.056	0.003	0.002	0.035	0.041	14.6	14.6411	0.0	
41	4.0	240	0.004	0.006	0.186	0.000	0.000	0.060	0.004	0.003	0.047	0.041	14.7	14.6789	0.0	
42	4.1	246	0.004	0.006	0.192	0.000	0.000	0.064	0.004	0.003	0.048	0.046	16.5	16.4812	0.0	
43	4.2	252	0.003	0.005	0.197	0.000	0.000	0.068	0.003	0.002	0.036	0.043	15.5	15.5138	0.0	
44	4.3	258	0.004	0.006	0.203	0.000	0.000	0.072	0.004	0.003	0.049	0.043	15.5	15.4707	0.0	
45	4.4	264	0.004	0.006	0.210	0.000	0.000	0.076	0.004	0.003	0.050	0.048	17.3	17.3045	0.0	
46	4.5	270	0.004	0.006	0.216	0.000	0.000	0.081	0.005	0.003	0.051	0.050	18.0	17.9687	0.0	
47	4.6	276	0.004	0.006	0.222	0.000	0.000	0.085	0.005	0.003	0.052	0.051	18.3	18.3302	0.0	
48	4.7	282	0.004	0.006	0.229	0.000	0.000	0.090	0.005	0.003	0.052	0.052	18.6	18.6063	0.0	
49	4.8	288	0.004	0.006	0.235	0.000	0.000	0.095	0.005	0.003	0.053	0.052	18.9	18.8521	0.0	
50	4.9	294	0.005	0.008	0.243	0.000	0.000	0.101	0.006	0.004	0.067	0.058	20.9	20.9005	0.0	
51	5.0	300	0.004	0.006	0.250	0.000	0.000	0.106	0.005	0.003	0.054	0.060	21.6	21.5920	0.0	
52	5.1	306	0.005	0.008	0.258	0.000	0.000	0.112	0.006	0.004	0.069	0.061	22.0	21.9774	0.0	
53	5.2	312	0.004	0.006	0.264	0.000	0.000	0.117	0.005	0.003	0.055	0.062	22.2	22.2352	0.0	
54	5.3	318	0.005	0.008	0.272	0.000	0.000	0.123	0.006	0.004	0.070	0.062	22.5	22.4913	0.0	
55	5.4	324	0.005	0.008	0.280	0.000	0.000	0.129	0.006	0.004	0.071	0.068	24.6	24.6180	0.0	
56	5.5	330	0.005	0.008	0.288	0.000	0.000	0.135	0.006	0.004	0.071	0.070	25.3	25.3413	0.0	
57	5.6	336	0.005	0.008	0.295	0.000	0.000	0.142	0.006	0.004	0.072	0.071	25.7	25.7036	0.0	
58	5.7	342	0.005	0.008	0.304	0.000	0.000	0.148	0.006	0.004	0.073	0.072	26.0	25.9821	0.0	
59	5.8	348	0.005	0.008	0.312	0.000	0.000	0.155	0.006	0.004	0.074	0.073	25.3	25.3014	0.0	
60	5.9	354	0.005	0.008	0.320	0.000	0.000	0.161	0.007	0.004	0.075	0.074	25.7	25.6813	0.0	
61	6.0	360	0.005	0.010	0.330	0.001	0.000	0.169	0.008	0.005	0.091	0.081	29.1	29.1427	0.0	
62	6.1	366	0.005	0.010	0.339	0.001	0.000	0.177	0.008	0.005	0.093	0.089	32.2	32.1758	0.0	
63	6.2	372	0.005	0.010	0.349	0.002	0.001	0.185	0.008	0.005	0.094	0.093	33.3	33.3283	0.0	
64	6.3	378	0.006	0.010	0.358	0.002	0.001	0.193	0.008	0.005	0.096	0.094	34.0	33.9955	0.0	
65	6.4	384	0.007	0.011	0.370	0.003	0.001	0.203	0.010	0.006	0.113	0.102	36.7	36.7314	0.0	
66	6.5	390	0.006	0.010	0.379	0.004	0.001	0.211	0.009	0.006	0.099	0.105	37.8	37.7973	0.0	
67	6.6	396	0.006	0.010	0.389	0.005	0.001	0.219	0.008	0.006	0.100	0.101	36.2	36.2318	0.0	
68	6.7	402	0.006	0.010	0.398	0.006	0.001	0.228	0.008	0.006	0.101	0.100	36.2	36.1691	0.0	
69	6.8	408	0.006	0.010	0.408	0.007	0.001	0.236	0.008	0.006	0.102	0.101	36.5	36.4715	0.0	
70	6.9	414	0.006	0.010	0.418	0.009	0.001	0.244	0.008	0.006	0.103	0.102	36.9	36.8551	0.0	
71	7.0	420	0.007	0.011	0.429	0.010	0.002	0.254	0.010	0.007	0.122	0.110	39.6	39.6120	0.0	
72	7.1	426	0.007	0.011	0.440	0.012	0.002	0.264	0.010	0.007	0.123	0.119	43.0	43.0008	0.0	
73	7.2	432	0.008	0.013	0.453	0.014	0.002	0.276	0.011	0.008	0.143	0.130	46.7	46.6509	0.0	
74	7.3	438	0.008	0.013	0.466	0.017	0.002	0.287	0.011	0.008	0.144	0.140	50.4	50.4031	0.0	
75	7.4	444	0.009	0.014	0.480	0.020	0.003	0								

85	8.4	504	0.010	0.016	0.755	0.107	0.007	0.556	0.015	0.012	0.214	0.226	81.2	68.3640	551.1
86	8.5	510	0.008	0.013	0.768	0.112	0.005	0.568	0.012	0.010	0.172	0.201	72.5	68.3640	555.3
87	8.6	516	0.009	0.014	0.782	0.118	0.006	0.582	0.014	0.011	0.195	0.188	67.7	67.7418	555.3
88	8.7	522	0.009	0.014	0.797	0.124	0.006	0.595	0.014	0.011	0.196	0.194	69.7	68.3640	556.6
89	8.8	528	0.007	0.011	0.808	0.129	0.005	0.606	0.011	0.009	0.153	0.179	64.6	64.6733	556.6
90	8.9	534	0.008	0.013	0.821	0.135	0.006	0.618	0.012	0.010	0.176	0.168	60.5	60.5474	556.6
91	9.0	540	0.007	0.011	0.832	0.140	0.005	0.629	0.011	0.009	0.154	0.166	59.7	59.7090	556.6
92	9.1	546	0.007	0.011	0.843	0.145	0.005	0.640	0.011	0.009	0.155	0.157	56.7	56.6926	556.6
93	9.2	552	0.008	0.010	0.853	0.150	0.004	0.649	0.009	0.007	0.133	0.147	53.1	53.0851	556.6
94	9.3	558	0.006	0.010	0.862	0.154	0.005	0.658	0.009	0.007	0.134	0.137	49.3	49.3077	556.6
95	9.4	564	0.006	0.010	0.872	0.159	0.005	0.667	0.009	0.008	0.124	0.135	48.5	48.4700	556.6
96	9.5	570	0.005	0.008	0.880	0.163	0.004	0.675	0.008	0.006	0.112	0.126	45.3	45.3369	556.6
97	9.6	576	0.006	0.010	0.890	0.167	0.005	0.684	0.009	0.008	0.135	0.124	44.6	44.6483	556.6
98	9.7	582	0.005	0.009	0.898	0.171	0.004	0.692	0.008	0.006	0.113	0.124	44.6	44.5638	556.6
99	9.8	588	0.006	0.010	0.907	0.175	0.005	0.701	0.009	0.008	0.135	0.124	44.6	44.6220	556.6
100	9.9	594	0.005	0.009	0.915	0.180	0.004	0.709	0.008	0.006	0.113	0.124	44.7	44.7145	556.6
101	10.0	600	0.005	0.008	0.923	0.184	0.004	0.717	0.008	0.006	0.113	0.116	41.8	41.7611	556.6
102	10.1	606	0.005	0.008	0.931	0.188	0.004	0.724	0.008	0.006	0.114	0.114	41.1	41.0894	556.6
103	10.2	612	0.005	0.008	0.939	0.192	0.004	0.732	0.008	0.006	0.114	0.114	41.0	40.9872	556.6
104	10.3	618	0.005	0.008	0.947	0.196	0.004	0.740	0.008	0.006	0.114	0.114	41.0	41.0265	556.6
105	10.4	624	0.004	0.006	0.954	0.199	0.003	0.746	0.006	0.005	0.091	0.106	38.0	38.0703	556.6
106	10.5	630	0.005	0.008	0.962	0.204	0.004	0.754	0.008	0.006	0.115	0.104	37.3	37.3131	556.6
107	10.6	636	0.005	0.008	0.970	0.208	0.004	0.761	0.008	0.006	0.115	0.112	40.3	40.2851	556.6
108	10.7	642	0.004	0.006	0.976	0.211	0.003	0.768	0.006	0.005	0.092	0.106	38.0	37.9825	556.6
109	10.8	648	0.005	0.008	0.984	0.215	0.004	0.775	0.008	0.006	0.115	0.104	37.5	37.4617	556.6
110	10.9	654	0.005	0.008	0.992	0.220	0.004	0.783	0.008	0.006	0.115	0.112	40.5	40.4930	556.6
111	11.0	660	0.004	0.006	0.998	0.223	0.003	0.789	0.006	0.005	0.092	0.106	38.2	38.1864	556.6
112	11.1	666	0.004	0.006	1.005	0.227	0.003	0.796	0.006	0.005	0.093	0.095	34.5	34.5340	556.6
113	11.2	672	0.005	0.008	1.013	0.231	0.004	0.803	0.008	0.006	0.116	0.102	35.8	36.7915	556.6
114	11.3	678	0.004	0.006	1.019	0.234	0.003	0.810	0.005	0.005	0.093	0.104	37.4	37.3973	556.6
115	11.4	684	0.004	0.006	1.026	0.238	0.003	0.816	0.006	0.005	0.093	0.096	34.5	34.4566	556.6
116	11.5	690	0.004	0.006	1.032	0.241	0.004	0.822	0.006	0.005	0.093	0.094	33.8	33.7574	556.6
117	11.6	696	0.004	0.006	1.038	0.245	0.004	0.828	0.006	0.005	0.093	0.093	33.6	33.6184	556.6
118	11.7	702	0.004	0.006	1.045	0.248	0.004	0.834	0.006	0.005	0.093	0.093	33.9	33.6190	556.6
119	11.8	708	0.004	0.006	1.051	0.252	0.004	0.841	0.006	0.005	0.094	0.093	33.7	33.6542	556.6
120	11.9	714	0.003	0.005	1.056	0.255	0.003	0.845	0.005	0.004	0.070	0.085	30.5	30.5334	556.6
121	12.0	720	0.004	0.006	1.062	0.258	0.004	0.851	0.005	0.005	0.094	0.093	29.8	29.7833	556.6
122	12.1	726	0.004	0.006	1.069	0.262	0.004	0.858	0.006	0.005	0.094	0.091	32.8	32.7899	556.6
123	12.2	732	0.003	0.005	1.074	0.265	0.003	0.862	0.005	0.004	0.071	0.084	30.4	30.3894	556.6
124	12.3	738	0.004	0.006	1.080	0.268	0.004	0.869	0.005	0.005	0.094	0.083	29.8	29.8311	556.6
125	12.4	744	0.004	0.006	1.086	0.272	0.004	0.875	0.005	0.005	0.094	0.091	32.9	32.8939	556.6
126	12.5	750	0.004	0.006	1.093	0.275	0.004	0.881	0.005	0.005	0.094	0.094	33.7	33.8925	556.6
127	12.6	756	0.004	0.006	1.099	0.279	0.004	0.887	0.006	0.005	0.095	0.094	33.9	33.9247	556.6
128	12.7	762	0.003	0.005	1.104	0.282	0.003	0.892	0.005	0.004	0.071	0.086	30.8	30.8198	556.6
129	12.8	768	0.004	0.006	1.110	0.286	0.004	0.899	0.006	0.005	0.095	0.084	30.1	30.0716	556.6
130	12.9	774	0.003	0.005	1.115	0.288	0.003	0.903	0.005	0.004	0.071	0.083	29.9	29.9054	556.6
131	13.0	780	0.004	0.006	1.122	0.292	0.004	0.909	0.006	0.005	0.095	0.083	29.9	29.8914	556.6
132	13.1	786	0.004	0.006	1.128	0.296	0.004	0.915	0.006	0.005	0.095	0.082	33.1	33.1173	556.6
133	13.2	792	0.003	0.005	1.133	0.299	0.003	0.920	0.005	0.004	0.071	0.085	30.7	30.7419	556.6
134	13.3	798	0.004	0.006	1.139	0.302	0.004	0.926	0.006	0.005	0.095	0.084	30.2	30.1749	556.6
135	13.4	804	0.004	0.006	1.146	0.306	0.004	0.933	0.006	0.005	0.095	0.082	33.3	33.2726	556.6
136	13.5	810	0.003	0.005	1.150	0.309	0.003	0.937	0.005	0.004	0.072	0.086	30.9	30.8540	556.6
137	13.6	816	0.003	0.005	1.155	0.312	0.003	0.942	0.005	0.004	0.072	0.075	27.0	27.0496	556.6
138	13.7	822	0.004	0.006	1.162	0.316	0.004	0.948	0.006	0.005	0.096	0.082	29.3	29.3439	556.6
139	13.8	828	0.003	0.005	1.166	0.319	0.003	0.953	0.005	0.004	0.072	0.083	29.9	29.9368	556.6
140	13.9	834	0.004	0.006	1.173	0.323	0.004	0.959	0.006	0.005	0.096	0.084	30.1	30.1106	556.6
141	14.0	840	0.003	0.005	1.178	0.325	0.003	0.964	0.005	0.004	0.072	0.084	30.2	30.1731	556.6
142	14.1	846	0.003	0.005	1.182	0.328	0.003	0.968	0.005	0.004	0.072	0.075	27.0	26.9726	556.6
143	14.2	852	0.004	0.006	1.189	0.332	0.004	0.975	0.006	0.005	0.096	0.082	29.4	29.4325	556.6
144	14.3	858	0.003	0.005	1.194	0.335	0.003	0.979	0.005	0.004	0.072	0.084	30.1	30.0961	556.6
145	14.4	864	0.003	0.005	1.198	0.338	0.003	0.984	0.005	0.004	0.072	0.075	27.0	26.9990	556.6
146	14.5	870	0.004	0.006	1.205	0.342	0.004	0.990	0.006	0.005	0.096	0.082	29.5	29.5007	556.6
147	14.6	876	0.003	0.005	1.210	0.345	0.003	0.995	0.005	0.004	0.072	0.084	30.1	30.1443	556.6
148	14.7	882	0.003	0.005	1.214	0.348	0.003	1.000	0.005	0.004	0.072	0.075	27.1	27.0705	556.6
149	14.8	888	0.004	0.006	1.221	0.352	0.004	1.006	0.006	0.005	0.097	0.082	29.6	29.5787	556.6
150	14.9	894	0.003	0.005	1.226	0.355	0.003	1.011	0.005	0.004	0.073	0.084	30.2	30.2236	556.6
151	15.0	900	0.003	0.005	1.230	0.358	0.003	1.015	0.005	0.004	0.073	0.075	27.1	27.1412	556.6
152	15.1	906	0.003	0.005	1.235	0.361	0.003	1.020	0.005	0.004	0.073	0.073	26.4	26.3857	556.6
153	15.2	912	0.004	0.006	1.242	0.365	0.004	1.026	0.006	0.005	0.097	0.082	29.5	29.4838	556.6
154	15.3	918	0.003	0.005	1.248	0.368	0.003	1.031	0.005	0.004	0.073	0.084	30.3	30.2767	556.6
155	15.4	924	0.003	0.005	1.254	0.371	0.003	1.036	0.005	0.004	0.073	0.076	27.2	27.2187	556.6
156	15.5	930	0.003	0.005	1.258	0.374	0.003	1.040	0.005	0.004	0.073	0.074	26.5	26.4691	556.6
157	15.6	936	0.003	0.005	1.261	0.377	0.003	1.045	0.005	0.004	0.073	0.073	28.3	28.2962	556.6
158	15.7	942	0.004	0.006	1.267	0.381	0.004	1.051	0.006	0.005	0.097	0.082	29.6	29.5524	556.6
159	15.8	948	0.003	0.005	1.272	0.384	0.003	1.056	0.005	0.004	0.073	0.084	30.4	30.3832	556.6
160	15.9	954	0.003	0.005	1.277	0.387	0.003	1.061	0.005	0.004	0.073	0.076	27.3	27.3225	556.6
161	16.0	960	0.003	0.005	1.282	0.390	0.003	1.066	0.005	0.004	0.073	0.074	26.4	2	

183	18.2	1092	0.002	0.003	1.384	0.457	0.002	1.166	0.003	0.003	0.049	0.065	23.3	23.3402	556.6
184	18.3	1098	0.003	0.005	1.389	0.460	0.003	1.171	0.005	0.004	0.074	0.063	22.5	22.5319	556.6
185	18.4	1104	0.003	0.005	1.394	0.463	0.003	1.175	0.005	0.004	0.074	0.071	25.7	25.6794	556.6
186	18.5	1110	0.003	0.005	1.398	0.466	0.003	1.180	0.005	0.004	0.074	0.074	26.5	26.4784	556.6
187	18.6	1116	0.002	0.003	1.402	0.468	0.002	1.183	0.003	0.003	0.050	0.065	23.3	23.3434	556.6
188	18.7	1122	0.003	0.005	1.406	0.471	0.003	1.188	0.005	0.004	0.074	0.063	22.6	22.5697	556.6
189	18.8	1128	0.003	0.005	1.411	0.475	0.003	1.193	0.005	0.004	0.074	0.071	25.7	25.7330	556.6
190	18.9	1134	0.002	0.003	1.414	0.477	0.002	1.196	0.003	0.003	0.050	0.064	23.2	23.1836	556.6
191	19.0	1140	0.003	0.005	1.419	0.480	0.003	1.201	0.005	0.004	0.075	0.063	22.6	22.5562	556.6
192	19.1	1146	0.003	0.005	1.424	0.483	0.003	1.205	0.005	0.004	0.075	0.072	25.8	25.7611	556.6
193	19.2	1152	0.002	0.003	1.427	0.485	0.002	1.208	0.003	0.003	0.050	0.064	23.2	23.2168	556.6
194	19.3	1158	0.003	0.005	1.432	0.489	0.003	1.213	0.005	0.004	0.075	0.063	22.6	22.5904	556.6
195	19.4	1164	0.002	0.003	1.435	0.491	0.002	1.216	0.003	0.003	0.050	0.062	22.4	22.4403	556.6
196	19.5	1170	0.003	0.005	1.440	0.494	0.003	1.221	0.005	0.004	0.075	0.062	22.4	22.4123	556.6
197	19.6	1176	0.003	0.005	1.445	0.497	0.003	1.226	0.005	0.004	0.075	0.072	25.8	25.7753	556.6
198	19.7	1182	0.002	0.003	1.448	0.500	0.002	1.229	0.003	0.003	0.050	0.065	23.3	23.2619	556.6
199	19.8	1188	0.003	0.005	1.453	0.503	0.003	1.234	0.005	0.004	0.075	0.063	22.6	22.6430	556.6
200	19.9	1194	0.002	0.003	1.456	0.505	0.002	1.237	0.003	0.003	0.050	0.062	22.5	22.4946	556.6
201	20.0	1200	0.003	0.005	1.461	0.508	0.003	1.242	0.005	0.004	0.075	0.062	22.5	22.4668	556.6
202	20.1	1206	0.002	0.003	1.464	0.510	0.002	1.245	0.003	0.003	0.050	0.062	22.5	22.4661	556.6
203	20.2	1212	0.003	0.005	1.469	0.514	0.003	1.249	0.005	0.004	0.075	0.062	22.5	22.4752	556.6
204	20.3	1218	0.002	0.003	1.472	0.516	0.002	1.253	0.003	0.003	0.050	0.062	22.5	22.4636	556.6
205	20.4	1224	0.002	0.003	1.475	0.518	0.002	1.256	0.003	0.003	0.050	0.053	19.1	19.1160	556.6
206	20.5	1230	0.003	0.005	1.480	0.521	0.003	1.260	0.005	0.004	0.075	0.060	21.7	21.6598	556.6
207	20.6	1236	0.002	0.003	1.483	0.524	0.002	1.264	0.003	0.003	0.050	0.062	22.3	22.3011	556.6
208	20.7	1242	0.003	0.005	1.488	0.527	0.003	1.268	0.005	0.004	0.075	0.062	22.5	22.4704	556.6
209	20.8	1248	0.002	0.003	1.491	0.529	0.002	1.271	0.003	0.003	0.050	0.063	22.5	22.5183	556.6
210	20.9	1254	0.002	0.003	1.494	0.531	0.002	1.275	0.003	0.003	0.050	0.053	19.2	19.1566	556.6
211	21.0	1260	0.003	0.005	1.499	0.535	0.003	1.279	0.005	0.004	0.075	0.060	21.7	21.7053	556.6
212	21.1	1266	0.002	0.003	1.502	0.537	0.002	1.283	0.003	0.003	0.050	0.062	22.3	22.3463	556.6
213	21.2	1272	0.002	0.003	1.506	0.539	0.002	1.286	0.003	0.003	0.050	0.053	19.1	19.1306	556.6
214	21.3	1278	0.003	0.005	1.510	0.542	0.003	1.290	0.005	0.004	0.075	0.060	21.7	21.7194	556.6
215	21.4	1284	0.002	0.003	1.514	0.545	0.002	1.294	0.003	0.003	0.050	0.062	22.4	22.3724	556.6
216	21.5	1290	0.002	0.003	1.517	0.547	0.002	1.297	0.003	0.003	0.050	0.053	19.2	19.1530	556.6
217	21.6	1296	0.003	0.005	1.522	0.550	0.003	1.301	0.005	0.004	0.075	0.060	21.7	21.7463	556.6
218	21.7	1302	0.002	0.003	1.525	0.553	0.002	1.305	0.003	0.003	0.050	0.062	22.4	22.3992	556.6
219	21.8	1308	0.002	0.003	1.528	0.555	0.002	1.308	0.003	0.003	0.050	0.053	19.2	19.1758	556.6
220	21.9	1314	0.002	0.003	1.531	0.557	0.002	1.311	0.003	0.003	0.050	0.051	18.4	18.3746	556.6
221	22.0	1320	0.002	0.003	1.534	0.559	0.002	1.314	0.003	0.003	0.050	0.050	18.2	18.1788	556.6
222	22.1	1326	0.003	0.005	1.539	0.563	0.003	1.319	0.005	0.004	0.075	0.060	21.5	21.5333	556.6
223	22.2	1332	0.002	0.003	1.542	0.565	0.002	1.322	0.003	0.003	0.050	0.062	22.4	22.3775	556.6
224	22.3	1338	0.002	0.003	1.546	0.567	0.002	1.325	0.003	0.003	0.050	0.053	19.2	19.1954	556.6
225	22.4	1344	0.002	0.003	1.549	0.569	0.002	1.328	0.003	0.003	0.050	0.051	18.4	18.4043	556.6
226	22.5	1350	0.002	0.003	1.552	0.572	0.002	1.331	0.003	0.003	0.050	0.051	18.2	18.2110	556.6
227	22.6	1356	0.002	0.003	1.555	0.574	0.002	1.335	0.003	0.003	0.050	0.050	18.2	18.1672	556.6
228	22.7	1362	0.002	0.003	1.558	0.576	0.002	1.338	0.003	0.003	0.050	0.050	18.2	18.1606	556.6
229	22.8	1368	0.002	0.003	1.562	0.578	0.002	1.341	0.003	0.003	0.050	0.050	18.2	18.1634	556.6
230	22.9	1374	0.002	0.003	1.565	0.581	0.002	1.344	0.003	0.003	0.050	0.050	18.2	18.1685	556.6
231	23.0	1380	0.002	0.003	1.568	0.583	0.002	1.347	0.003	0.003	0.050	0.050	18.2	18.1741	556.6
232	23.1	1386	0.002	0.003	1.571	0.585	0.002	1.350	0.003	0.003	0.051	0.050	18.2	18.1799	556.6
233	23.2	1392	0.002	0.003	1.574	0.587	0.002	1.353	0.003	0.003	0.051	0.051	18.2	18.1857	556.6
234	23.3	1398	0.002	0.003	1.578	0.590	0.002	1.357	0.003	0.003	0.051	0.051	18.2	18.1915	556.6
235	23.4	1404	0.002	0.003	1.581	0.592	0.002	1.360	0.003	0.003	0.051	0.051	18.2	18.1973	556.6
236	23.5	1410	0.002	0.003	1.584	0.594	0.002	1.363	0.003	0.003	0.051	0.051	18.2	18.2030	556.6
237	23.6	1416	0.002	0.003	1.587	0.597	0.002	1.366	0.003	0.003	0.051	0.051	18.2	18.2087	556.6
238	23.7	1422	0.002	0.003	1.590	0.599	0.002	1.369	0.003	0.003	0.051	0.051	18.2	18.2144	556.6
239	23.8	1428	0.002	0.003	1.594	0.601	0.002	1.372	0.003	0.003	0.051	0.051	18.2	18.2201	556.6
240	23.9	1434	0.002	0.003	1.597	0.603	0.002	1.376	0.003	0.003	0.051	0.051	18.2	18.2258	556.6
241	24.0	1440	0.002	0.003	1.600	0.606	0.002	1.379	0.003	0.003	0.051	0.051	18.2	18.2314	556.6

Max Storage Req= 556.6 C.F.

SCS Type 1A Regional Storm - Central Basin
Stormwater Runoff Area - Right Ditch

Area (acres) = 1.852 P (inches) = 1.6 d_i (min) = 6 T_c (min) = 5 Infiltration Area (ft²) = 7230.0
 W_s = 0.375 CN = 87 S = 1.49 0.2S = 0.30 Max Storage (cu. ft.) = 480.2
 Pervious Area (acres) = 0.746 CN = 98 S = 0.20 0.2S = 0.04 Infiltration Rate (ft/min/ft²) = 0.0018
 Impervious Area (acres) = 1.106 Total Disp = 78.084000

1	2.0	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Time	Time	Time	Rainfall	Incremental	Accum.	Pervious	Pervious	Impervious	Impervious	Total	Instant	Design Flow	Incremental	Drywell	Accum.
Increment	Hours	(min)	Distribution	Rainfall	Rainfall	Acc. Run	Inc. Run	Acc. Run	Inc. Run	Runoff	Flow	Rate	Flow	Disp. Volume	Storage
			(Fraction)	(inches)	(inches)	(inches)	(inches)	(inches)	(inches)	(inches)	(inches)	(cfs)	(cfs)	(cf)	(cf)
1	0.0	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0	0.0000	0.0
2	0.1	6	0.002	0.003	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0	0.0000	0.0
3	0.2	12	0.002	0.003	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0	0.0000	0.0
4	0.3	18	0.002	0.003	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0	0.0000	0.0
5	0.4	24	0.002	0.003	0.013	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0	0.0000	0.0
6	0.5	30	0.002	0.003	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0	0.0000	0.0
7	0.6	36	0.002	0.003	0.019	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0	0.0000	0.0
8	0.7	42	0.002	0.003	0.022	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0	0.0000	0.0
9	0.8	48	0.002	0.003	0.026	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0	0.0000	0.0
10	0.9	54	0.002	0.003	0.029	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0	0.0000	0.0
11	1.0	60	0.002	0.003	0.032	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0	0.0000	0.0
12	1.1	66	0.003	0.005	0.037	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0	0.0000	0.0
13	1.2	72	0.003	0.005	0.042	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0	0.0045	0.0
14	1.3	78	0.003	0.005	0.046	0.000	0.000	0.000	0.000	0.000	0.002	0.001	0.2	0.2250	0.0
15	1.4	84	0.003	0.005	0.051	0.000	0.000	0.001	0.000	0.000	0.004	0.002	0.8	0.8086	0.0
16	1.5	90	0.003	0.005	0.056	0.000	0.000	0.001	0.001	0.000	0.008	0.004	1.6	1.5613	0.0
17	1.6	96	0.003	0.005	0.061	0.000	0.000	0.002	0.001	0.000	0.008	0.006	2.3	2.3167	0.0
18	1.7	102	0.003	0.005	0.066	0.000	0.000	0.003	0.001	0.001	0.010	0.008	3.0	3.0368	0.0
19	1.8	108	0.003	0.005	0.070	0.000	0.000	0.004	0.001	0.001	0.012	0.010	3.7	3.7149	0.0
20	1.9	114	0.003	0.005	0.075	0.000	0.000	0.005	0.001	0.001	0.014	0.012	4.4	4.3522	0.0
21	2.0	120	0.003	0.005	0.080	0.000	0.000	0.006	0.001	0.001	0.015	0.014	5.0	4.9512	0.0
22	2.1	126	0.003	0.005	0.085	0.000	0.000	0.008	0.001	0.001	0.017	0.016	5.5	5.5149	0.0
23	2.2	132	0.003	0.005	0.090	0.000	0.000	0.009	0.002	0.001	0.018	0.017	6.0	6.0460	0.0
24	2.3	138	0.004	0.006	0.096	0.000	0.000	0.012	0.002	0.001	0.026	0.021	7.5	7.4539	0.0
25	2.4	144	0.003	0.005	0.101	0.000	0.000	0.014	0.002	0.001	0.021	0.023	8.2	8.2079	0.0
26	2.5	150	0.003	0.005	0.106	0.000	0.000	0.016	0.002	0.001	0.022	0.022	7.9	7.8696	0.0
27	2.6	156	0.003	0.005	0.110	0.000	0.000	0.018	0.002	0.001	0.023	0.022	8.1	8.0907	0.0
28	2.7	162	0.003	0.005	0.115	0.000	0.000	0.020	0.002	0.001	0.024	0.023	8.4	8.4357	0.0
29	2.8	168	0.004	0.006	0.122	0.000	0.000	0.023	0.003	0.002	0.034	0.026	10.0	9.9624	0.0
30	2.9	174	0.003	0.005	0.126	0.000	0.000	0.025	0.002	0.001	0.027	0.030	10.6	10.6460	0.0
31	3.0	180	0.003	0.005	0.131	0.000	0.000	0.028	0.002	0.001	0.027	0.028	9.9	9.9384	0.0
32	3.1	186	0.003	0.005	0.136	0.000	0.000	0.030	0.003	0.002	0.028	0.028	10.0	9.9937	0.0
33	3.2	192	0.003	0.005	0.141	0.000	0.000	0.033	0.003	0.002	0.029	0.028	10.2	10.2285	0.0
34	3.3	198	0.003	0.005	0.146	0.000	0.000	0.036	0.003	0.002	0.030	0.029	10.5	10.4979	0.0
35	3.4	204	0.004	0.006	0.152	0.000	0.000	0.039	0.004	0.002	0.041	0.034	12.2	12.1604	0.0
36	3.5	210	0.003	0.005	0.157	0.000	0.000	0.042	0.003	0.002	0.031	0.036	12.8	12.7990	0.0
37	3.6	216	0.003	0.005	0.162	0.000	0.000	0.045	0.004	0.002	0.044	0.037	13.2	13.1821	0.0
38	3.7	222	0.004	0.006	0.168	0.000	0.000	0.049	0.004	0.002	0.044	0.037	13.2	13.1821	0.0
39	3.8	228	0.004	0.006	0.174	0.000	0.000	0.053	0.004	0.002	0.045	0.042	15.2	15.2497	0.0
40	3.9	234	0.003	0.005	0.179	0.000	0.000	0.056	0.003	0.002	0.034	0.040	14.5	14.4840	0.0
41	4.0	240	0.004	0.006	0.186	0.000	0.000	0.060	0.004	0.002	0.046	0.040	14.5	14.4840	0.0
42	4.1	246	0.004	0.006	0.192	0.000	0.000	0.064	0.004	0.003	0.047	0.045	16.3	16.3043	0.0
43	4.2	252	0.003	0.005	0.197	0.000	0.000	0.068	0.003	0.002	0.036	0.043	15.3	15.3473	0.0
44	4.3	258	0.004	0.006	0.203	0.000	0.000	0.072	0.004	0.003	0.049	0.043	15.3	15.3046	0.0
45	4.4	264	0.004	0.006	0.210	0.000	0.000	0.076	0.004	0.003	0.050	0.048	17.1	17.1188	0.0
46	4.5	270	0.004	0.006	0.216	0.000	0.000	0.081	0.005	0.003	0.050	0.049	17.8	17.7759	0.0
47	4.6	276	0.004	0.006	0.222	0.000	0.000	0.085	0.005	0.003	0.051	0.050	18.1	18.1334	0.0
48	4.7	282	0.004	0.006	0.229	0.000	0.000	0.090	0.005	0.003	0.052	0.051	18.4	18.4066	0.0
49	4.8	288	0.004	0.006	0.235	0.000	0.000	0.095	0.005	0.003	0.052	0.052	18.6	18.6497	0.0
50	4.9	294	0.005	0.008	0.243	0.000	0.000	0.101	0.006	0.004	0.056	0.057	20.7	20.6782	0.0
51	5.0	300	0.004	0.006	0.250	0.000	0.000	0.106	0.005	0.003	0.054	0.059	21.4	21.3602	0.0
52	5.1	306	0.005	0.008	0.258	0.000	0.000	0.112	0.006	0.004	0.068	0.060	21.7	21.7415	0.0
53	5.2	312	0.004	0.006	0.264	0.000	0.000	0.117	0.005	0.003	0.055	0.061	22.0	21.9965	0.0
54	5.3	318	0.005	0.008	0.272	0.000	0.000	0.123	0.006	0.004	0.069	0.062	22.2	22.2499	0.0
55	5.4	324	0.005	0.008	0.280	0.000	0.000	0.129	0.006	0.004	0.070	0.068	24.1	24.3538	0.0
56	5.5	330	0.005	0.008	0.288	0.000	0.000	0.135	0.006	0.004	0.071	0.070	25.4	25.0593	0.0
57	5.6	336	0.005	0.008	0.296	0.000	0.000	0.142	0.006	0.004	0.071	0.071	25.4	25.4278	0.0
58	5.7	342	0.005	0.008	0.304	0.000	0.000	0.148	0.006	0.004	0.072	0.071	25.7	25.7056	0.0
59	5.8	348	0.005	0.008	0.312	0.000	0.000	0.155	0.006	0.004	0.073	0.072	26.0	26.0351	0.0
60	5.9	354	0.005	0.008	0.320	0.000	0.000	0.161	0.007	0.004	0.074	0.073	26.4	26.4363	0.0
61	6.0	360	0.006	0.010	0.330	0.001	0.000	0.169	0.008	0.005	0.091	0.080	28.9	28.9084	0.0
62	6.1	366	0.006	0.010	0.339	0.001	0.000	0.177	0.008	0.005	0.092	0.089	32.0	31.9531	0.0
63	6.2	372	0.006	0.010	0.348	0.002	0.001	0.185	0.008	0.005	0.094	0.092	33.1	33.1364	0.0
64	6.3	378	0.006	0.010	0.358	0.002	0.001	0.193	0.008	0.005	0.095	0.094	33.8	33.8374	0.0
65	6.4	384	0.007	0.011	0.370	0.003	0.001	0.203	0.010	0.006	0.113	0.102	36.6	36.6019	0.0
66	6.5	390	0.006	0.010	0.379	0.004	0.001	0.211	0.008	0.005	0.098	0.105	37.7	37.7029	0.0
67	6.6	396	0.006	0.010	0.389	0.005	0.001	0.219	0.008	0.005	0.100	0.100	36.2	36.1780	0.0
68	6.7	402	0.006	0.010	0.399	0.006	0.001	0.228	0.008	0.005	0.101	0.100	36.2	36.1501	0.0
69	6.8	408	0.006	0.010	0.408	0.007	0.001	0.236	0.008	0.005	0.102	0.101	36.5	36.4854	0.0
70	6.9	414	0.006	0.010	0.416	0.009	0.001	0.244	0.008	0.005	0.103	0.103	36.9	36.9011	0.0
71	7.0	420	0.007	0.011	0.429	0.010	0.002	0.254	0.010	0.007	0.122	0.110	39.7	39.6972	0.0
72	7.1	426	0.007	0.011	0.440	0.012	0.002	0.264	0.010	0.007	0.124	0.120	43.1	43.1325	0.0
73	7.2	432	0.008	0.013	0.453	0.014	0.002	0.276	0.011	0.008	0.143	0.130	46.8	46.8348	0.0
74	7.3	438	0.008	0.013	0.466	0.017	0.002	0.287	0.011	0.008	0.145	0.141			

85	8.4	504	0.010	0.016	0.755	0.107	0.007	0.556	0.015	0.012	0.219	0.230	82.8	76.0840	480.2
86	8.5	510	0.008	0.013	0.768	0.112	0.005	0.568	0.012	0.009	0.175	0.205	74.0	73.9530	480.2
87	8.6	516	0.009	0.014	0.782	0.118	0.006	0.582	0.014	0.011	0.199	0.192	69.1	69.1106	480.2
88	8.7	522	0.009	0.014	0.797	0.124	0.006	0.595	0.014	0.011	0.200	0.198	71.2	71.1691	480.2
89	8.8	528	0.007	0.011	0.808	0.129	0.005	0.606	0.011	0.008	0.156	0.183	65.9	65.9339	480.2
90	8.9	534	0.008	0.013	0.821	0.135	0.006	0.618	0.012	0.010	0.180	0.172	61.8	61.8476	480.2
91	9.0	540	0.007	0.011	0.832	0.140	0.005	0.629	0.011	0.008	0.158	0.169	61.0	61.0123	480.2
92	9.1	546	0.007	0.011	0.843	0.145	0.005	0.640	0.011	0.008	0.158	0.161	57.9	57.9493	480.2
93	9.2	552	0.006	0.010	0.853	0.150	0.004	0.649	0.009	0.007	0.136	0.151	54.3	54.2778	480.2
94	9.3	558	0.006	0.010	0.862	0.154	0.005	0.658	0.009	0.007	0.137	0.140	50.4	50.4296	480.2
95	9.4	564	0.006	0.010	0.872	0.159	0.005	0.667	0.009	0.007	0.137	0.138	49.6	49.5859	480.2
96	9.5	570	0.005	0.008	0.880	0.163	0.004	0.675	0.008	0.006	0.115	0.129	46.4	46.3914	480.2
97	9.6	576	0.006	0.010	0.890	0.167	0.005	0.684	0.009	0.007	0.138	0.127	45.7	45.6978	480.2
98	9.7	582	0.005	0.008	0.898	0.171	0.004	0.692	0.008	0.006	0.115	0.127	45.6	45.6107	480.2
99	9.8	588	0.006	0.010	0.907	0.176	0.005	0.701	0.009	0.007	0.139	0.127	45.7	45.6909	480.2
100	9.9	594	0.005	0.008	0.915	0.180	0.004	0.709	0.008	0.006	0.116	0.127	45.8	45.7947	480.2
101	10.0	600	0.005	0.008	0.923	0.184	0.004	0.717	0.008	0.006	0.116	0.119	42.8	42.7786	480.2
102	10.1	606	0.005	0.008	0.931	0.188	0.004	0.724	0.008	0.006	0.116	0.117	42.1	42.0986	480.2
103	10.2	612	0.005	0.008	0.939	0.192	0.004	0.732	0.008	0.006	0.117	0.117	42.0	42.0017	480.2
104	10.3	618	0.005	0.008	0.947	0.196	0.004	0.740	0.008	0.006	0.117	0.117	42.0	42.0496	480.2
105	10.4	624	0.004	0.006	0.954	0.199	0.003	0.746	0.006	0.005	0.094	0.108	39.0	38.9644	480.2
106	10.5	630	0.005	0.008	0.962	0.204	0.004	0.754	0.008	0.006	0.117	0.106	38.3	38.2564	480.2
107	10.6	636	0.005	0.008	0.970	0.208	0.004	0.761	0.008	0.006	0.118	0.115	41.3	41.3103	480.2
108	10.7	642	0.004	0.006	0.976	0.211	0.003	0.768	0.008	0.005	0.094	0.108	39.0	38.9549	480.2
109	10.8	648	0.005	0.008	0.984	0.215	0.004	0.775	0.008	0.006	0.118	0.107	38.4	38.4271	480.2
110	10.9	654	0.005	0.008	0.992	0.220	0.004	0.783	0.008	0.006	0.118	0.115	41.5	41.5431	480.2
111	11.0	660	0.004	0.006	0.998	0.223	0.003	0.789	0.006	0.005	0.095	0.109	39.2	39.1822	480.2
112	11.1	666	0.004	0.006	1.005	0.227	0.003	0.796	0.006	0.005	0.095	0.095	35.4	35.4397	480.2
113	11.2	672	0.005	0.008	1.013	0.231	0.004	0.803	0.008	0.006	0.119	0.105	37.8	37.7620	480.2
114	11.3	678	0.004	0.006	1.019	0.234	0.003	0.810	0.006	0.005	0.095	0.107	38.4	38.3886	480.2
115	11.4	684	0.004	0.006	1.026	0.238	0.003	0.816	0.006	0.005	0.095	0.098	35.4	35.3748	480.2
116	11.5	690	0.004	0.006	1.032	0.241	0.004	0.822	0.006	0.005	0.095	0.096	34.7	34.6615	480.2
117	11.6	696	0.004	0.006	1.038	0.245	0.004	0.828	0.006	0.005	0.095	0.096	34.5	34.5230	480.2
118	11.7	702	0.004	0.006	1.045	0.248	0.004	0.834	0.006	0.005	0.095	0.096	34.5	34.5278	480.2
119	11.8	708	0.004	0.006	1.051	0.252	0.004	0.841	0.006	0.005	0.095	0.096	34.6	34.5661	480.2
120	11.9	714	0.003	0.005	1.056	0.255	0.003	0.845	0.005	0.004	0.072	0.087	31.4	31.3658	480.2
121	12.0	720	0.004	0.006	1.062	0.259	0.004	0.851	0.006	0.005	0.095	0.095	30.6	30.5888	480.2
122	12.1	726	0.004	0.006	1.069	0.262	0.004	0.859	0.006	0.005	0.097	0.094	33.7	33.6913	480.2
123	12.2	732	0.003	0.005	1.074	0.265	0.003	0.862	0.005	0.004	0.072	0.087	31.2	31.2381	480.2
124	12.3	738	0.004	0.006	1.080	0.268	0.004	0.869	0.006	0.005	0.097	0.095	30.7	30.6575	480.2
125	12.4	744	0.004	0.006	1.085	0.272	0.004	0.875	0.006	0.005	0.097	0.094	33.8	33.8088	480.2
126	12.5	750	0.004	0.006	1.093	0.275	0.004	0.881	0.006	0.005	0.097	0.096	34.6	34.6333	480.2
127	12.6	756	0.004	0.006	1.099	0.279	0.004	0.887	0.006	0.005	0.097	0.097	34.9	34.8758	480.2
128	12.7	762	0.003	0.005	1.104	0.282	0.003	0.892	0.005	0.004	0.073	0.088	31.7	31.6868	480.2
129	12.8	768	0.004	0.006	1.110	0.286	0.004	0.898	0.006	0.005	0.097	0.096	30.9	30.9208	480.2
130	12.9	774	0.003	0.005	1.115	0.288	0.003	0.903	0.005	0.004	0.073	0.085	30.8	30.7526	480.2
131	13.0	780	0.004	0.006	1.122	0.292	0.004	0.909	0.006	0.005	0.098	0.085	30.7	30.7413	480.2
132	13.1	786	0.004	0.006	1.128	0.296	0.004	0.915	0.006	0.005	0.098	0.095	34.1	34.0623	480.2
133	13.2	792	0.003	0.005	1.133	0.299	0.003	0.920	0.005	0.004	0.073	0.088	31.6	31.6219	480.2
134	13.3	798	0.004	0.006	1.139	0.302	0.004	0.926	0.006	0.005	0.098	0.086	31.0	31.0418	480.2
135	13.4	804	0.004	0.006	1.146	0.306	0.004	0.933	0.006	0.005	0.098	0.095	34.2	34.2316	480.2
136	13.5	810	0.003	0.005	1.150	0.309	0.003	0.937	0.005	0.004	0.074	0.088	27.8	27.8340	480.2
137	13.6	816	0.003	0.005	1.155	0.312	0.003	0.942	0.005	0.004	0.074	0.087	30.2	30.1976	480.2
138	13.7	822	0.004	0.006	1.162	0.316	0.004	0.948	0.006	0.005	0.098	0.084	30.8	30.6101	480.2
139	13.8	828	0.003	0.005	1.166	0.319	0.003	0.953	0.005	0.004	0.074	0.086	30.8	30.6101	480.2
140	13.9	834	0.004	0.006	1.173	0.323	0.004	0.959	0.006	0.005	0.099	0.085	31.0	30.5919	480.2
141	14.0	840	0.003	0.005	1.178	0.325	0.003	0.964	0.005	0.004	0.074	0.086	31.1	31.0589	480.2
142	14.1	846	0.003	0.005	1.182	0.328	0.003	0.968	0.005	0.004	0.074	0.077	27.8	27.7653	480.2
143	14.2	852	0.004	0.006	1.189	0.332	0.004	0.975	0.006	0.005	0.099	0.084	30.3	30.3013	480.2
144	14.3	858	0.003	0.005	1.194	0.335	0.003	0.979	0.005	0.004	0.074	0.085	31.0	30.9558	480.2
145	14.4	864	0.003	0.005	1.198	0.338	0.003	0.984	0.005	0.004	0.074	0.077	27.8	27.8001	480.2
146	14.5	870	0.004	0.006	1.205	0.342	0.004	0.990	0.006	0.005	0.099	0.084	30.4	30.3986	480.2
147	14.6	876	0.003	0.005	1.210	0.345	0.003	0.995	0.005	0.004	0.074	0.086	31.0	31.0435	480.2
148	14.7	882	0.003	0.005	1.214	0.348	0.003	1.000	0.005	0.004	0.075	0.077	27.9	27.8801	480.2
149	14.8	888	0.004	0.006	1.221	0.352	0.004	1.006	0.006	0.005	0.099	0.085	30.5	30.4659	480.2
150	14.9	894	0.003	0.005	1.226	0.355	0.003	1.011	0.005	0.004	0.075	0.086	31.1	31.1322	480.2
151	15.0	900	0.003	0.005	1.230	0.358	0.003	1.015	0.005	0.004	0.075	0.078	28.0	27.9592	480.2
152	15.1	906	0.003	0.005	1.235	0.361	0.003	1.020	0.005	0.004	0.075	0.076	27.2	27.1828	480.2
153	15.2	912	0.004	0.006	1.242	0.365	0.004	1.026	0.006	0.005	0.100	0.084	30.4	30.3769	480.2
154	15.3	918	0.003	0.005	1.246	0.368	0.003	1.031	0.005	0.004	0.075	0.087	31.2	31.1948	480.2
155	15.4	924	0.003	0.005	1.251	0.371	0.003	1.036	0.005	0.004	0.075	0.078	28.0	28.0470	480.2
156	15.5	930	0.003	0.005	1.256	0.374	0.003	1.040	0.005	0.004	0.075	0.076	27.3	27.2764	480.2
157	15.6	936	0.003	0.005	1.261	0.377	0.003	1.045	0.005	0.004	0.075	0.075	27.1	27.1000	480.2
158	15.7	942	0.004	0.006	1.267	0.381	0.004	1.051	0.006	0.005	0.100	0.085	30.5	30.4580	480.2
159	15.8	948	0.003	0.005	1.272	0.384	0.003	1.056	0.005	0.004	0.075	0.087	31.3	31.3163	480.2
160	15.9	954	0.003	0.005	1.277	0.387	0.003	1.061	0.005	0.004	0.075	0.078	28.2	28.1634	480.2
161	16.0	960	0.003	0.005	1.282	0.390	0.003	1.066	0.005	0.004	0.075	0.076	27.4	2	

183	18.2	1092	0.002	0.003	1.384	0.457	0.002	1.166	0.003	0.003	0.051	0.057	24.1	24.0898	480.2
184	18.3	1098	0.003	0.005	1.389	0.460	0.003	1.171	0.005	0.004	0.077	0.085	23.3	23.2568	480.2
185	18.4	1104	0.003	0.005	1.394	0.463	0.003	1.175	0.005	0.004	0.077	0.074	26.5	26.5068	480.2
186	18.5	1110	0.003	0.005	1.398	0.466	0.003	1.180	0.005	0.004	0.077	0.076	27.3	27.3329	480.2
187	18.6	1116	0.002	0.003	1.402	0.468	0.002	1.183	0.003	0.003	0.051	0.057	24.1	24.0978	480.2
188	18.7	1122	0.003	0.005	1.406	0.471	0.003	1.188	0.005	0.004	0.077	0.085	23.3	23.3002	480.2
189	18.8	1128	0.003	0.005	1.411	0.475	0.003	1.193	0.005	0.004	0.077	0.074	26.6	26.5672	480.2
190	18.9	1134	0.002	0.003	1.414	0.477	0.002	1.196	0.003	0.003	0.051	0.065	23.9	23.9361	480.2
191	19.0	1140	0.003	0.005	1.419	0.480	0.003	1.201	0.005	0.004	0.077	0.065	23.3	23.2894	480.2
192	19.1	1146	0.003	0.005	1.424	0.483	0.003	1.205	0.005	0.004	0.077	0.074	26.6	26.5998	480.2
193	19.2	1152	0.002	0.003	1.427	0.485	0.002	1.208	0.003	0.003	0.051	0.067	24.0	23.9736	480.2
194	19.3	1158	0.003	0.005	1.432	0.489	0.003	1.213	0.005	0.004	0.077	0.065	23.3	23.3279	480.2
195	19.4	1164	0.002	0.003	1.435	0.491	0.002	1.216	0.003	0.003	0.051	0.064	23.2	23.1737	480.2
196	19.5	1170	0.003	0.005	1.440	0.494	0.003	1.221	0.005	0.004	0.077	0.064	23.1	23.1459	480.2
197	19.6	1176	0.003	0.005	1.445	0.497	0.003	1.226	0.005	0.004	0.077	0.074	26.6	26.6202	480.2
198	19.7	1182	0.002	0.003	1.448	0.500	0.002	1.229	0.003	0.003	0.051	0.067	24.0	24.0254	480.2
199	19.8	1188	0.003	0.005	1.453	0.503	0.003	1.234	0.005	0.004	0.077	0.085	23.4	23.3873	480.2
200	19.9	1194	0.002	0.003	1.456	0.505	0.002	1.237	0.003	0.003	0.052	0.065	23.2	23.2348	480.2
201	20.0	1200	0.003	0.005	1.461	0.508	0.003	1.242	0.005	0.004	0.077	0.064	23.2	23.2071	480.2
202	20.1	1206	0.002	0.003	1.464	0.510	0.002	1.245	0.003	0.003	0.052	0.064	23.2	23.2072	480.2
203	20.2	1212	0.003	0.005	1.469	0.514	0.003	1.249	0.005	0.004	0.077	0.064	23.2	23.2176	480.2
204	20.3	1218	0.002	0.003	1.472	0.516	0.002	1.253	0.003	0.003	0.052	0.065	23.2	23.2271	480.2
205	20.4	1224	0.002	0.003	1.475	0.518	0.002	1.256	0.003	0.003	0.052	0.055	19.8	19.7518	480.2
206	20.5	1230	0.003	0.005	1.480	0.521	0.003	1.260	0.005	0.004	0.078	0.062	22.4	22.3778	480.2
207	20.6	1236	0.002	0.003	1.483	0.524	0.002	1.264	0.003	0.003	0.052	0.064	23.0	23.0411	480.2
208	20.7	1242	0.003	0.005	1.488	0.527	0.003	1.268	0.005	0.004	0.078	0.064	23.2	23.2171	480.2
209	20.8	1248	0.002	0.003	1.491	0.529	0.002	1.271	0.003	0.003	0.052	0.065	23.3	23.2578	480.2
210	20.9	1254	0.002	0.003	1.494	0.531	0.002	1.275	0.003	0.003	0.052	0.055	19.8	19.7945	480.2
211	21.0	1260	0.003	0.005	1.499	0.535	0.003	1.279	0.005	0.004	0.078	0.062	22.4	22.4289	480.2
212	21.1	1266	0.002	0.003	1.502	0.537	0.002	1.283	0.003	0.003	0.052	0.064	23.1	23.0941	480.2
213	21.2	1272	0.002	0.003	1.506	0.539	0.002	1.286	0.003	0.003	0.052	0.055	19.8	19.7697	480.2
214	21.3	1278	0.003	0.005	1.510	0.542	0.003	1.290	0.005	0.004	0.078	0.062	22.4	22.4459	480.2
215	21.4	1284	0.002	0.003	1.514	0.545	0.002	1.294	0.003	0.003	0.052	0.064	23.1	23.1215	480.2
216	21.5	1290	0.002	0.003	1.517	0.547	0.002	1.297	0.003	0.003	0.052	0.055	19.8	19.7949	480.2
217	21.6	1296	0.003	0.005	1.522	0.550	0.003	1.301	0.005	0.004	0.078	0.062	22.5	22.4750	480.2
218	21.7	1302	0.002	0.003	1.525	0.553	0.002	1.305	0.003	0.003	0.052	0.064	23.2	23.1515	480.2
219	21.8	1308	0.002	0.003	1.528	0.555	0.002	1.308	0.003	0.003	0.052	0.055	19.8	19.8205	480.2
220	21.9	1314	0.002	0.003	1.531	0.557	0.002	1.311	0.003	0.003	0.052	0.053	19.0	18.9930	480.2
221	22.0	1320	0.002	0.003	1.534	0.559	0.002	1.314	0.003	0.003	0.052	0.052	18.6	18.7912	480.2
222	22.1	1326	0.003	0.005	1.539	0.563	0.003	1.319	0.005	0.004	0.078	0.062	22.3	22.2594	480.2
223	22.2	1332	0.002	0.003	1.542	0.565	0.002	1.322	0.003	0.003	0.052	0.064	23.1	23.1328	480.2
224	22.3	1338	0.002	0.003	1.546	0.567	0.002	1.325	0.003	0.003	0.052	0.055	19.8	19.8439	480.2
225	22.4	1344	0.002	0.003	1.549	0.569	0.002	1.328	0.003	0.003	0.052	0.053	19.0	19.0267	480.2
226	22.5	1350	0.002	0.003	1.552	0.572	0.002	1.331	0.003	0.003	0.052	0.052	18.8	18.8274	480.2
227	22.6	1356	0.002	0.003	1.555	0.574	0.002	1.335	0.003	0.003	0.052	0.052	18.8	18.7826	480.2
228	22.7	1362	0.002	0.003	1.558	0.576	0.002	1.338	0.003	0.003	0.052	0.052	18.8	18.7764	480.2
229	22.8	1368	0.002	0.003	1.562	0.578	0.002	1.341	0.003	0.003	0.052	0.052	18.8	18.7798	480.2
230	22.9	1374	0.002	0.003	1.565	0.581	0.002	1.344	0.003	0.003	0.052	0.052	18.8	18.7856	480.2
231	23.0	1380	0.002	0.003	1.568	0.583	0.002	1.347	0.003	0.003	0.052	0.052	18.8	18.7919	480.2
232	23.1	1386	0.002	0.003	1.571	0.585	0.002	1.350	0.003	0.003	0.052	0.052	18.8	18.7984	480.2
233	23.2	1392	0.002	0.003	1.574	0.587	0.002	1.353	0.003	0.003	0.052	0.052	18.8	18.8050	480.2
234	23.3	1398	0.002	0.003	1.578	0.590	0.002	1.357	0.003	0.003	0.052	0.052	18.8	18.8114	480.2
235	23.4	1404	0.002	0.003	1.581	0.592	0.002	1.360	0.003	0.003	0.052	0.052	18.8	18.8179	480.2
236	23.5	1410	0.002	0.003	1.584	0.594	0.002	1.363	0.003	0.003	0.052	0.052	18.8	18.8244	480.2
237	23.6	1416	0.002	0.003	1.587	0.597	0.002	1.366	0.003	0.003	0.052	0.052	18.8	18.8308	480.2
238	23.7	1422	0.002	0.003	1.590	0.599	0.002	1.369	0.003	0.003	0.052	0.052	18.8	18.8372	480.2
239	23.8	1428	0.002	0.003	1.594	0.601	0.002	1.372	0.003	0.003	0.052	0.052	18.8	18.8436	480.2
240	23.9	1434	0.002	0.003	1.597	0.603	0.002	1.375	0.003	0.003	0.052	0.052	18.8	18.8499	480.2
241	24.0	1440	0.002	0.003	1.600	0.606	0.002	1.379	0.003	0.003	0.052	0.052	18.9	18.8563	480.2

Max Storage Req= 480.2 C.F.

PRIVATE ROAD NETWORK DRAWINGS FOR PALOMINO MAJOR PLAT, PHASE 3

Prepared By

WESTERN PACIFIC ENGINEERING & SURVEY



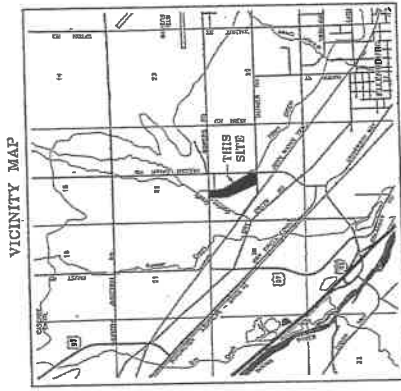
WESTERN PACIFIC
ENGINEERING & SURVEY
A TRUCK DEVELOPMENT SERVICES CORPORATION
1222 F STREET, SUITE 1000, FOLSOM, CALIFORNIA 95630
TEL: (916) 438-1222 FAX: (916) 438-1222

No.	Revisions	Date	By

LCTU, INC.
PALOMINO MAJOR PLAT, PHASE 3
ROAD DRIVE IMPROVEMENTS
Cover Sheet
Kittitas County

Designed by: JMR
Checked by: JMR
Project No.: 2419
Date: October 2010
Scale: 1" = 100'
Box: 17, 10, 11, 12
Box 21, 10, 11, 12

SHEET NO.
C1.0
101027



BENCH MARK LISTING

TBM#1 - Found monument marking the northeast corner of section 22 (Elevation=654.85)

TBM#2 - Found monument marking the southeast corner of section 20 (Elevation=659.32)

TBM#3 - Found monument marking the southeast corner of the southeast quarter of section 20. (Elevation=659.32)

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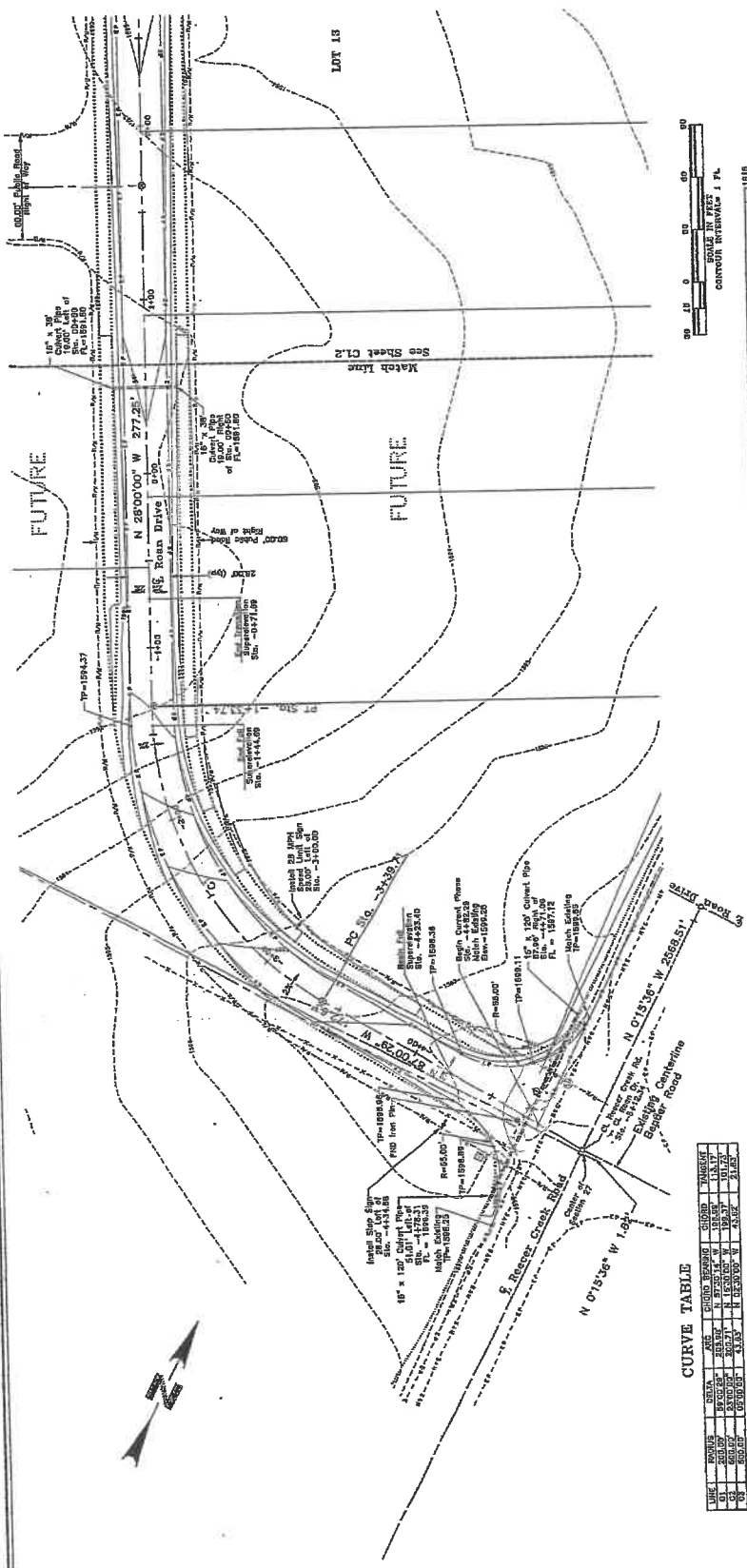
WESTERN PACIFIC
ENGINEERING & SURVEY
A TERRA DEVELOPMENT SERVICES COMPANY
1320 K. Miller Plaza, Suite 1000, Milpitas
CA 95027-1023 (408) 973-1238
Circle 10 on Reader Service Card

No.	Revisions	Date	By

LCT, INC.
PALOMINO MAJOR PLAT, PHASE 3
ROAN DRIVE IMPROVEMENTS
Plan and Profile Sta. -5+00 to Sta. 2+00
Orleans County

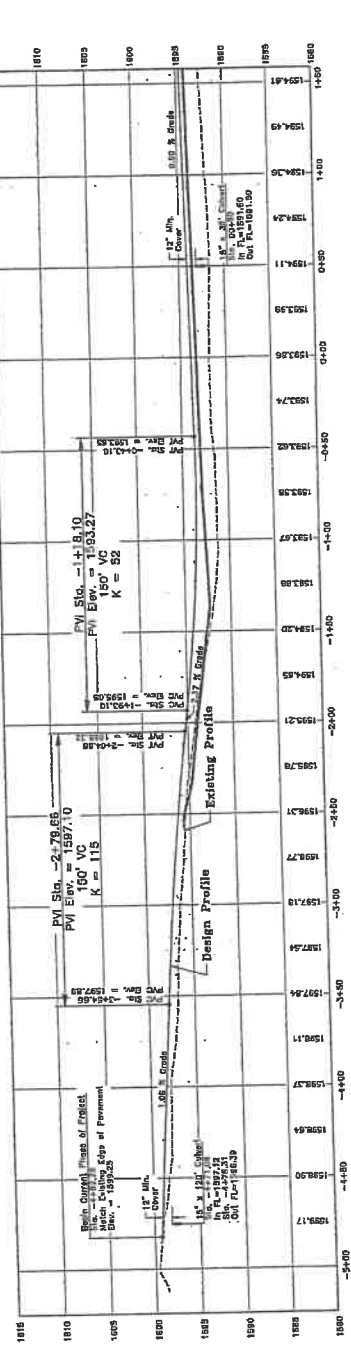
Designed by NCT
Drawn by Tom/AG
Checked by J. J. ...
Project No. 8111
Date October 2018
Scale: 1" = 40'
Sheet: 1 of 3
Date Plotted: 10/10/18

SHEET NO.
C1.1
181827



CURVE TABLE

STATION	DELTA	CHORD BEARING	CHORD	TANGENT
197+25	150.00	S 89.27° 15' 00" W	150.00	112.50
199+75	150.00	S 89.27° 15' 00" W	150.00	112.50
197+25	150.00	S 89.27° 15' 00" W	150.00	112.50
199+75	150.00	S 89.27° 15' 00" W	150.00	112.50



10/15/18



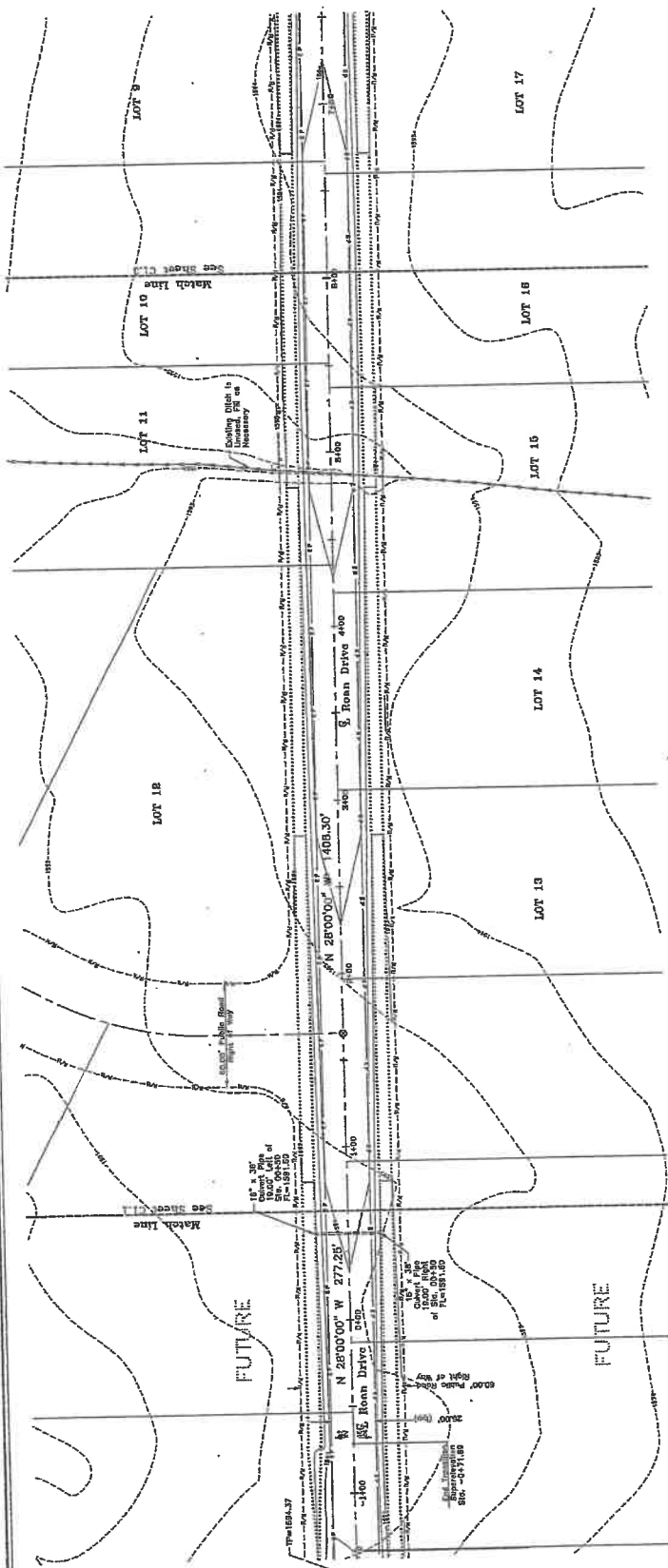
WESTERN PACIFIC
ENGINEERING & SURVEYING
 A FLSA DEVELOPMENT SERVICES CORPORATION
 1234 E. Market Street, Stockton, California 95210
 Telephone (209) 923-1234

No.	Revision	Date	By

LCU, INC.
PALOMINO MAJOR PLAT, PHASE 3
ROAN DRIVE IMPROVEMENTS
 Plan and Profile Sta. -1+00 to Sta. 7+00
 Kings County
 Washington

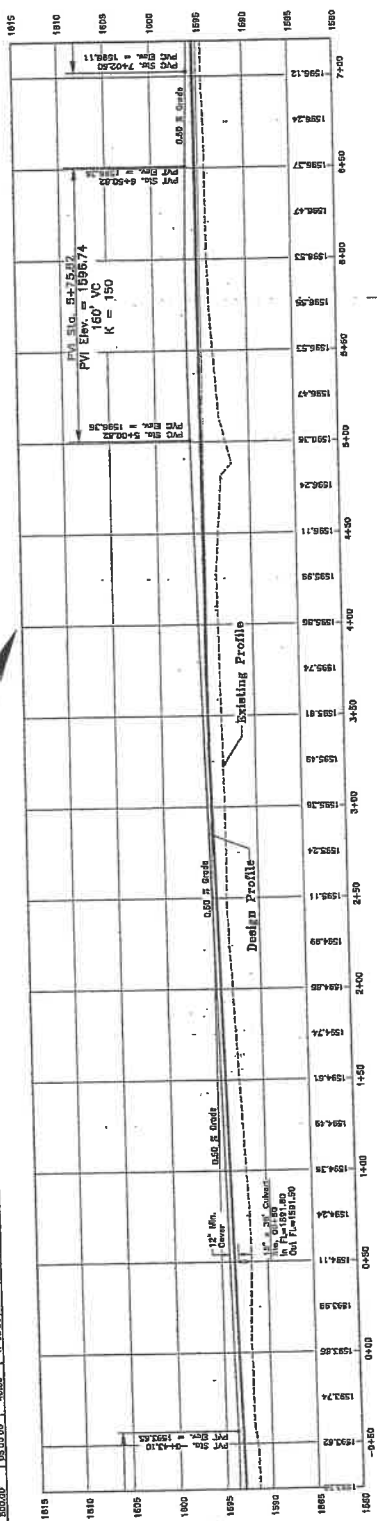
Designed by: [Name]
 Drawn by: [Name]
 Project No. 2010
 Issue No. 01
 Date: 10/25/10
 Scale: 1" = 40'
 800' x 1100' x 1100'

SHEET NO. **C1.2**
 18UB37



CURVE TABLE

LINE	STATION	CHORD BEARING	CHORD LENGTH	ARC LENGTH	ANGLE
1	1+00.00	S 277.25° W	277.25	277.25	90.00
2	1+00.00	N 280.00° W	280.00	280.00	90.00
3	1+00.00	N 280.00° W	280.00	280.00	90.00
4	1+00.00	N 280.00° W	280.00	280.00	90.00
5	1+00.00	N 280.00° W	280.00	280.00	90.00



10/25/10



**WESTERN PACIFIC
ENGINEERING & SURVEY**

1420 E. Center Street, Boise, Idaho, 83725
 1420 E. Center Street, Boise, Idaho, 83725
 1420 E. Center Street, Boise, Idaho, 83725

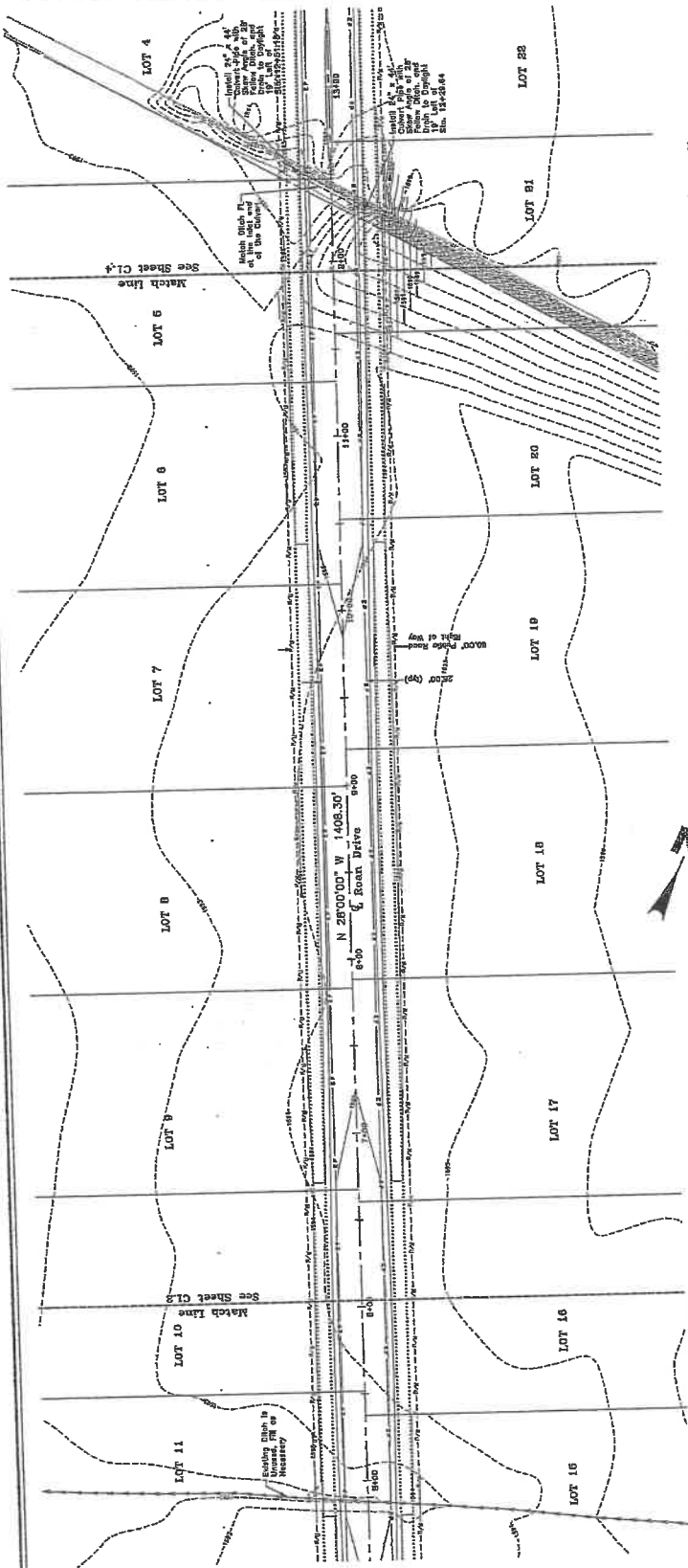
No.	Portions	Date

LCU, INC.
PALOMINO MAJOR PLAT, PHASE 3
ROAD DRIVE IMPROVEMENTS
Plan and Profile Sta. 4+75 to Sta. 12+50

Designed by RMR
 Drawn by TML/ABP
 Checked by JRM/ABP
 Project No. 14113
 Date October 2018
 Scale 1" = 40'
 Vertical 1" = 40'

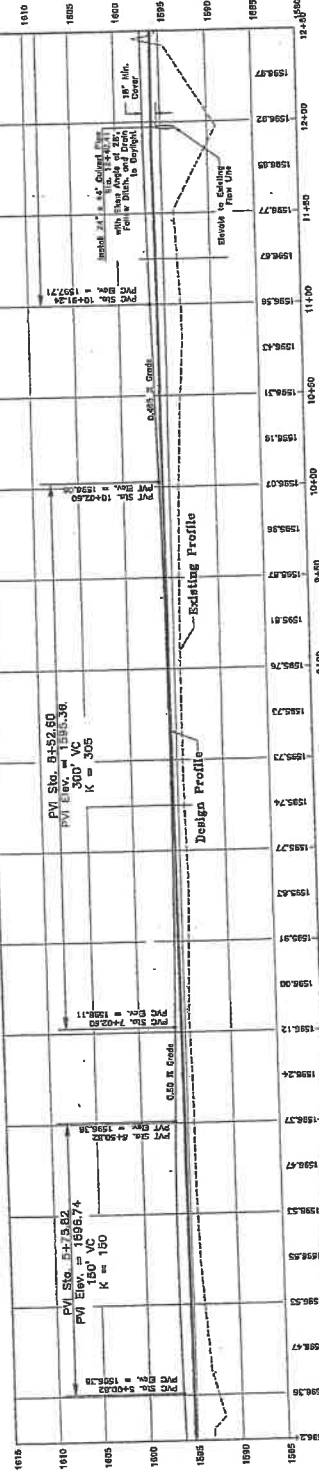
**SHEET NO.
C1.3**

10/18/18



CURVE TABLE

STATION	PC	PT	PI	STATION	CHORD BEARING	CHORD	ARC LENGTH
4+75	8400.00	8400.00	8400.00	4+75	140.83°	0.00	0.00
5+00	8400.00	8400.00	8400.00	5+00	140.83°	0.00	0.00
5+25	8400.00	8400.00	8400.00	5+25	140.83°	0.00	0.00
5+50	8400.00	8400.00	8400.00	5+50	140.83°	0.00	0.00
5+75	8400.00	8400.00	8400.00	5+75	140.83°	0.00	0.00
6+00	8400.00	8400.00	8400.00	6+00	140.83°	0.00	0.00
6+25	8400.00	8400.00	8400.00	6+25	140.83°	0.00	0.00
6+50	8400.00	8400.00	8400.00	6+50	140.83°	0.00	0.00
6+75	8400.00	8400.00	8400.00	6+75	140.83°	0.00	0.00
7+00	8400.00	8400.00	8400.00	7+00	140.83°	0.00	0.00
7+25	8400.00	8400.00	8400.00	7+25	140.83°	0.00	0.00
7+50	8400.00	8400.00	8400.00	7+50	140.83°	0.00	0.00
7+75	8400.00	8400.00	8400.00	7+75	140.83°	0.00	0.00
8+00	8400.00	8400.00	8400.00	8+00	140.83°	0.00	0.00
8+25	8400.00	8400.00	8400.00	8+25	140.83°	0.00	0.00
8+50	8400.00	8400.00	8400.00	8+50	140.83°	0.00	0.00
8+75	8400.00	8400.00	8400.00	8+75	140.83°	0.00	0.00
9+00	8400.00	8400.00	8400.00	9+00	140.83°	0.00	0.00
9+25	8400.00	8400.00	8400.00	9+25	140.83°	0.00	0.00
9+50	8400.00	8400.00	8400.00	9+50	140.83°	0.00	0.00
9+75	8400.00	8400.00	8400.00	9+75	140.83°	0.00	0.00
10+00	8400.00	8400.00	8400.00	10+00	140.83°	0.00	0.00
10+25	8400.00	8400.00	8400.00	10+25	140.83°	0.00	0.00
10+50	8400.00	8400.00	8400.00	10+50	140.83°	0.00	0.00
10+75	8400.00	8400.00	8400.00	10+75	140.83°	0.00	0.00
11+00	8400.00	8400.00	8400.00	11+00	140.83°	0.00	0.00
11+25	8400.00	8400.00	8400.00	11+25	140.83°	0.00	0.00
11+50	8400.00	8400.00	8400.00	11+50	140.83°	0.00	0.00
11+75	8400.00	8400.00	8400.00	11+75	140.83°	0.00	0.00
12+00	8400.00	8400.00	8400.00	12+00	140.83°	0.00	0.00
12+25	8400.00	8400.00	8400.00	12+25	140.83°	0.00	0.00
12+50	8400.00	8400.00	8400.00	12+50	140.83°	0.00	0.00



10/18/18



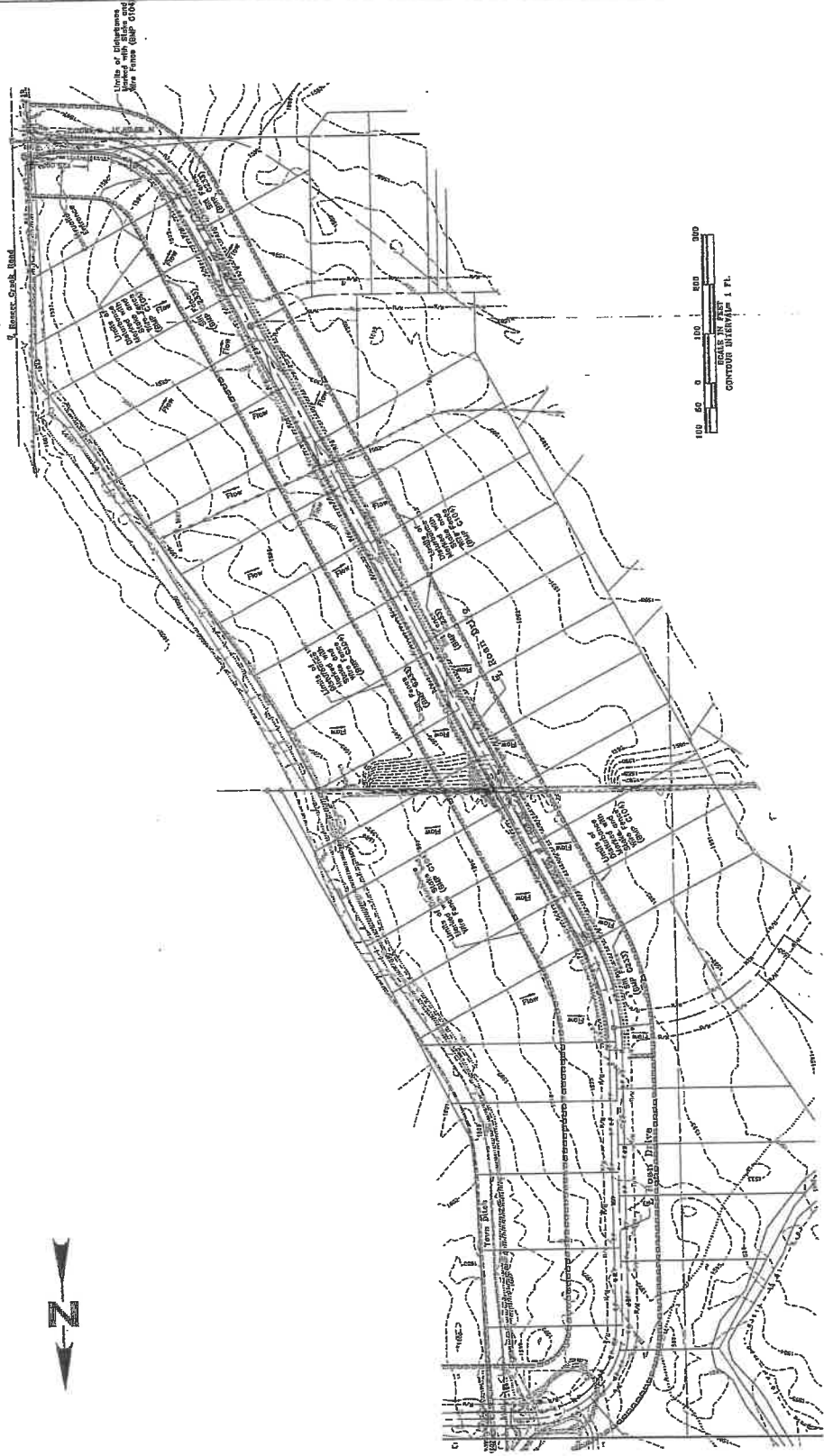
**WESTERN PACIFIC
ENGINEERING & SURVEY**
A TECHNICAL SURVEYING CORPORATION
1328 E. Market Street, Hayward, California
(415) 885-1022 (415) 885-1028
Projects in California and Utah

Revisions	Date	By

LCU, INC.
PALOMINO MAJOR PLAT, PHASE 3
Best Management Practices
Plan and Specifications

Drawn by: TML/AM
Checked by: TML/AM
Project No. 10115
Date: October 1916
Scale: 1" = 40'
Sheet No. 1 of 2
SHEET NO. C3.1

1010227



1. EROSION CONTROL
All cut and fill slopes will be stabilized and protected in a manner that will prevent erosion. Specific BMPs will be used to protect slopes for this project. The following BMPs will be used to protect slopes for this project:
- Plastic covering (per C103)
- Grassed slopes (per C103)
- Grassed swales (per C103)
- Grassed ditches (per C103)
In general, cut and fill slopes will be stabilized on such as appears to be suitable for the site. Specific BMPs will be used to protect slopes and to stabilize slopes. The specific BMPs to be used on controlling sediment on this project include:
- Plastic covering (per C103) - to prevent erosion on steep slopes where erosion is likely to occur.
- Grassed slopes (per C103) - to stabilize slopes and prevent erosion.
- Grassed swales (per C103) - to stabilize slopes and prevent erosion.
- Grassed ditches (per C103) - to stabilize slopes and prevent erosion.

2. CONTROL FLOW SPEED
To prevent erosion, all stormwater runoff being retained on site, there will be no flow control required.
3. EROSION CONTROL
All erosion control from disturbed areas shall pass through an approved sediment control device. The specific BMPs to be used on controlling sediment on this project include:
- Plastic covering (per C103) - to prevent erosion on steep slopes where erosion is likely to occur.
- Grassed slopes (per C103) - to stabilize slopes and prevent erosion.
- Grassed swales (per C103) - to stabilize slopes and prevent erosion.
- Grassed ditches (per C103) - to stabilize slopes and prevent erosion.

4. STABILIZED CONSTRUCTION AREAS
Construction areas on which erosion control measures shall be minimized, yet construction areas on which erosion control shall be stabilized to minimize the erosion of sediment into the water. The specific BMPs to be used on controlling sediment on this project include:
- Plastic covering (per C103) - to prevent erosion on steep slopes where erosion is likely to occur.
- Grassed slopes (per C103) - to stabilize slopes and prevent erosion.
- Grassed swales (per C103) - to stabilize slopes and prevent erosion.
- Grassed ditches (per C103) - to stabilize slopes and prevent erosion.

NOTES:
1. Mark Disturbance Limits
To protect and reduce the area of soil exposed to construction, the limits of construction shall be clearly marked. The limits shall be marked in an undisturbed area to the maximum extent possible. The project shall include:
- High Visibility Plastic or metal fence (per C103)
- High Visibility Plastic or metal fence (per C103)
2. Stabilized Construction Areas
Construction areas on which erosion control measures shall be minimized, yet construction areas on which erosion control shall be stabilized to minimize the erosion of sediment into the water. The specific BMPs to be used on controlling sediment on this project include:
- Plastic covering (per C103) - to prevent erosion on steep slopes where erosion is likely to occur.
- Grassed slopes (per C103) - to stabilize slopes and prevent erosion.
- Grassed swales (per C103) - to stabilize slopes and prevent erosion.
- Grassed ditches (per C103) - to stabilize slopes and prevent erosion.

Palomino



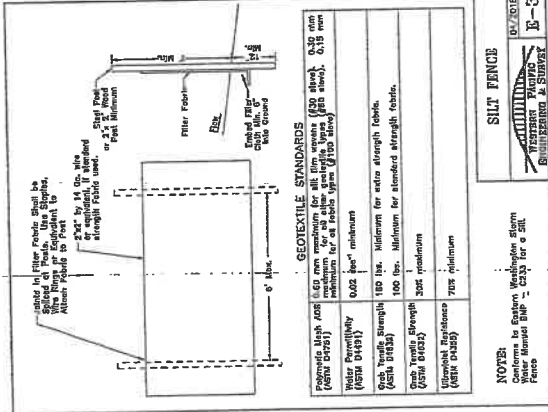
**WESTERN PACIFIC
ENGINEERING & SURVEY**
A 1979A DEVELOPMENT SERVICES CORPORATION
1328 E. BERRY STREET, PORTLAND, OREGON 97214
1503/215-1232
Contract by Washington and Linn

No.	Revisions	Date	By

LCU, INC.
Best Management Practices
Phase 3
Washington
Multnomah County

Designed by: NHT
Drawn by: Tami/HAC
Checked by: Tami/HAC
Project No.: 4810
Sheet No.: 0810
Sheet Date: October 2010
Scale: 1" = 10'
Date: 10/15/10
See P1, T 10 N, R 30 E

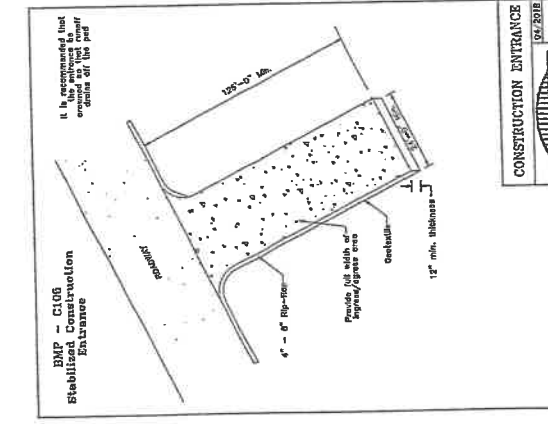
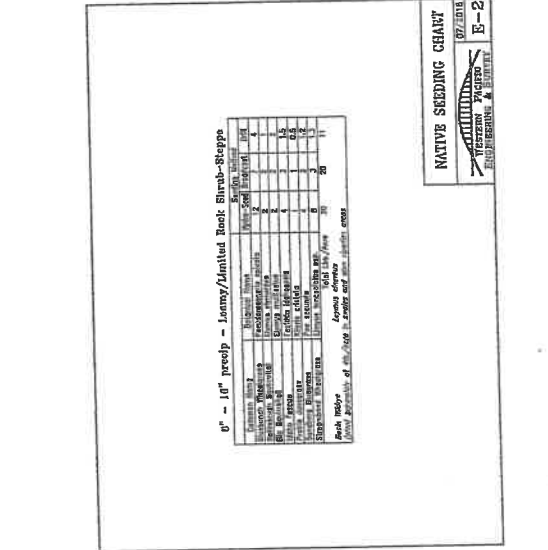
SHEET NO.
C3.2
10/15/10



GEOTEXTILE STANDARDS

Protonic Mesh (ASTM D1671)	0.015 mm maximum for all types (150 mesh) (150 mesh), 0.15 mm minimum for all types (150 mesh)
Water Permeability (ASTM D1671)	0.02 sec ² minimum
Grab Tensile Strength (ASTM D1671)	100 lbs. Minimum for extra strength fabric.
Grab Tensile Strength (ASTM D1671)	100 lbs. Minimum for standard strength fabric.
Uniformity (ASTM D1671)	30% maximum
Uniformity (ASTM D1671)	70% minimum

SILT FENCE
07/10/10
E-3
WESTERN PACIFIC
ENGINEERING & SURVEY



PRIVATE ROAD NETWORK DRAWINGS FOR PALOMINO MAJOR PLAT, PHASE II

Prepared By

WESTERN PACIFIC ENGINEERING & SURVEY



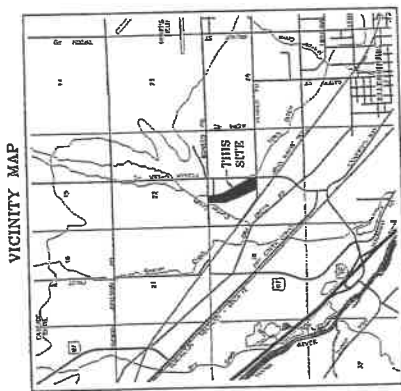
WESTERN PACIFIC
ENGINEERING & SURVEY
1222 Folsom Street, Suite 200
San Francisco, California 94102
Tel: (415) 774-1222
Fax: (415) 774-1228

No.	Revision	Date	By
01	County Review	05/18/18	NMN
02	County Review	05/18/18	NMN

PALOMINO MAJOR PLAT, PHASE II
ROAN DRIVE IMPROVEMENTS
Cover Sheet

Designed by: NMR
Checked by: NMR
Drawn by: NMR
Project No.: 181027
Date: July 2018
Scale: As Shown
See Sec. 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100

SHEET NO. C1.0
181027



BENCH MARK LISTING

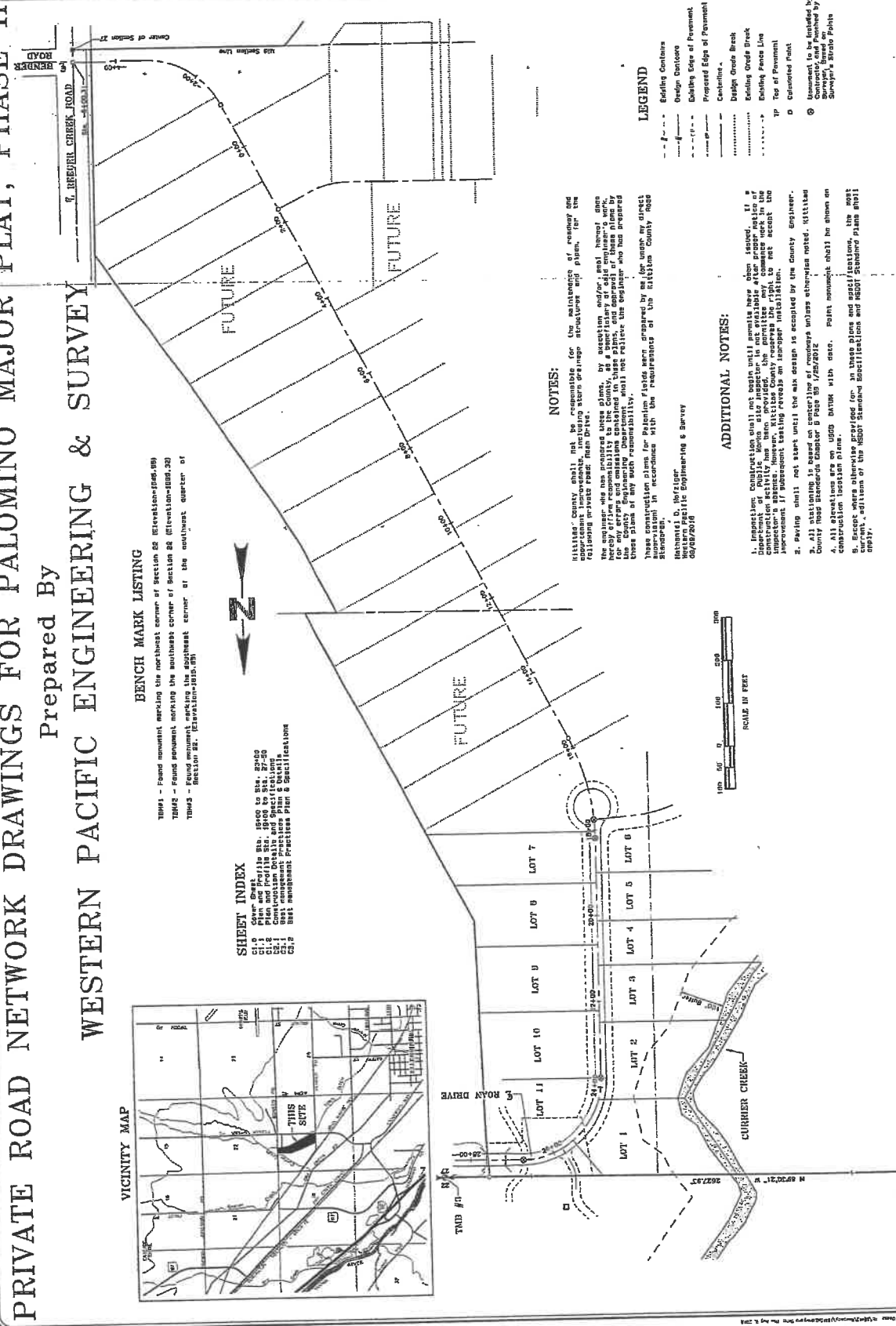
TBM#1 - Found monument marking the northeast corner of section 25 (Elevation=1058.88)

TBM#2 - Found monument marking the southeast corner of section 25 (Elevation=1058.32)

TBM#3 - Found monument marking the southeast corner of the southeast quarter of section 25 (Elevation=1055.85)

SHEET INDEX

Cover Sheet
C1.0
Plan and Profile
C1.1
C1.2
C1.3
C1.4
C1.5
C1.6
C1.7
C1.8
C1.9
C2.0
C2.1
C2.2



NOTES:

Kittitas County shall not be responsible for the maintenance of existing and proposed improvements, including storm drainage structures and plans, for the following private road: Main Drive.

The engineer has provided the County with a description of said improvements and construction activity has been provided to the County as a condition of said engineer's work. For any errors and omissions contained in these plans, drawings, and specifications, the engineer shall not be held responsible. The engineer and his firm have prepared these plans in accordance with the requirements of the Kittitas County Road Standards in accordance with the requirements of the Kittitas County Road Standards.

- LEGEND**
- Existing Centerline
 - Existing Edge of Pavement
 - Proposed Edge of Pavement
 - Centerline
 - Existing Grade Break
 - Existing Fence Line
 - Top of Pavement
 - Curved Point
 - Unimproved to be Included by Contractor, and Paved by Surveyor's State Public

ADDITIONAL NOTES:

- Impending construction shall not begin until permits have been issued. If a construction activity has been provided to the County as a condition of said engineer's work, the engineer shall not be held responsible for any errors and omissions contained in these plans, drawings, and specifications. The engineer and his firm have prepared these plans in accordance with the requirements of the Kittitas County Road Standards in accordance with the requirements of the Kittitas County Road Standards.
- Paving shall not start until the main design is accepted by the County Engineer.
- All stations are based on centerline of roadway unless otherwise noted. Kittitas County Road Standards Chapter 5 Page 55 1/25/2012
- All elevations are on UGSD datum with case. Point monument shall be shown on construction location plans.
- Beacons were observed during field work. In those places not mentioned, the most accurate elevations of the UGSD Standard Benchmarks and NSDOT Standard Plans shall apply.



These plans have been reviewed by Kittitas County Department of Public Works and have been accepted for compliance with the requirements of Kittitas County Road Standards.

M. J. [Signature]
County Engineer

Date: 7/20/18



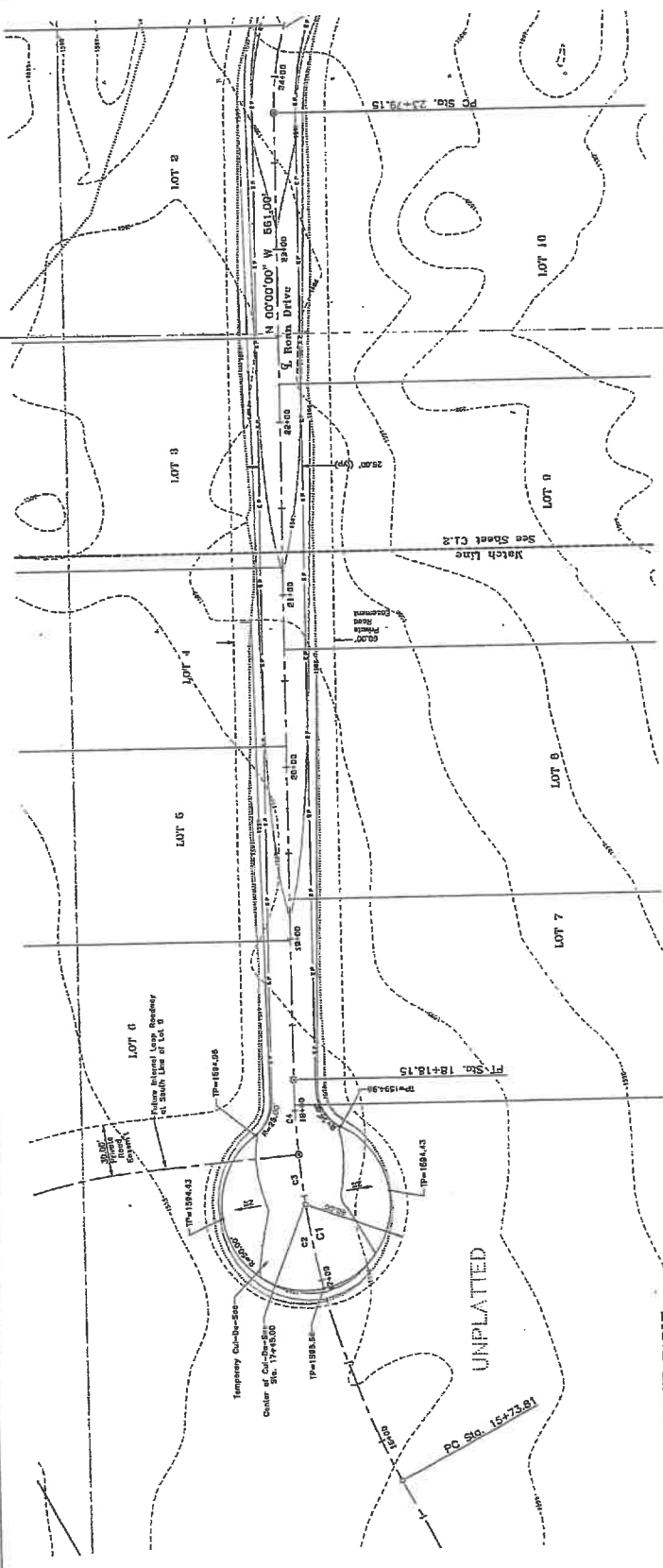
WESTERN PACIFIC
ENGINEERING & SURVEY
1200 E. Bayshore Drive, Alhambra, California 91801
Telephone: 627-1232, 627-1233, 627-1234, 627-1235

No.	Revision	Date	By
01	Comments	09/18/00	KDN
02	Quantity Review - 2	09/18/00	KDN

PALOMNO MAJOR PLAT, PHASE 2
Plan and Profile Sta. 16+00 to Sta. 23+00
Kilburn County, Washington

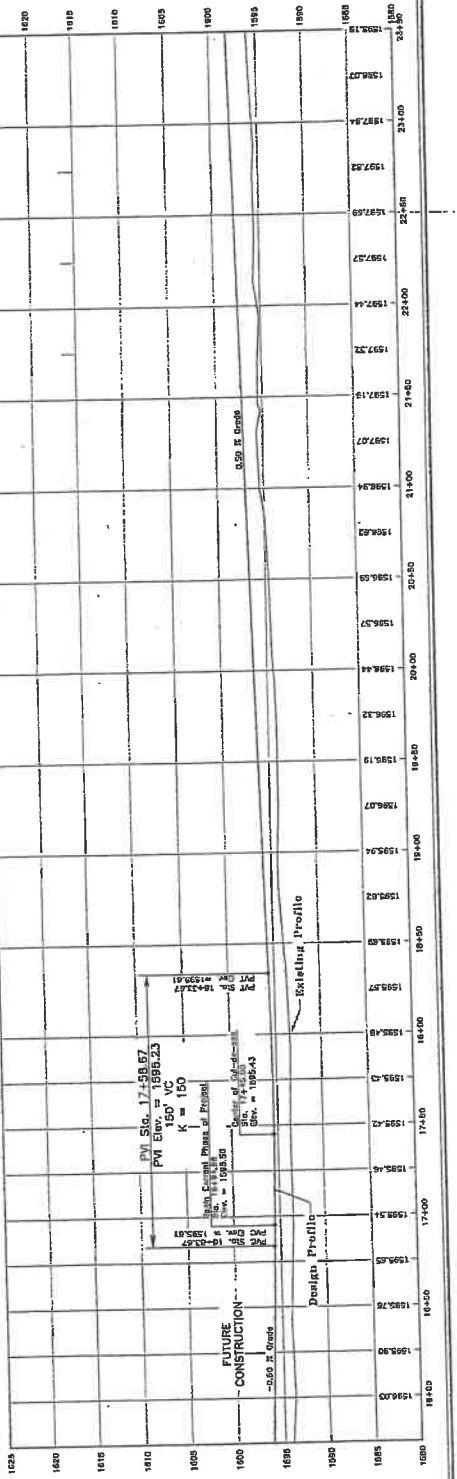
Prepared by: NMM
Checked by: NMM
Project No.: 04101
Date: April 2010
Scale: 1" = 40'
Sheet No.: C1.1
Map No.: 10, 11, 12, 13

SHEET NO.
C1.1
101087



CURVE TABLE

STATION	CHORD BEARING	CHORD LENGTH	ARC LENGTH	ANGLE
16+00.00	S 89° 52' 30" W	100.00	100.00	90.00
16+00.00	S 89° 52' 30" W	100.00	100.00	90.00
16+00.00	S 89° 52' 30" W	100.00	100.00	90.00
16+00.00	S 89° 52' 30" W	100.00	100.00	90.00
16+00.00	S 89° 52' 30" W	100.00	100.00	90.00
16+00.00	S 89° 52' 30" W	100.00	100.00	90.00
16+00.00	S 89° 52' 30" W	100.00	100.00	90.00
16+00.00	S 89° 52' 30" W	100.00	100.00	90.00
16+00.00	S 89° 52' 30" W	100.00	100.00	90.00
16+00.00	S 89° 52' 30" W	100.00	100.00	90.00



101087

