

**Appendix A**

SURVEYOR ASSISTANT

WORK PROCESS SCHEDULE

AND

RELATED INSTRUCTION OUTLINE

## Appendix A

### WORK PROCESS SCHEDULE SURVEYOR ASSISTANT, INSTRUMENTS O\*NET-SOC CODE: 17-3031.00                      RAPIDS CODE: 0551

This schedule is attached to and a part of these Standards for the above identified occupation.

#### 1. QUALIFICATIONS FOR APPRENTICESHIP

Applicants accepted and registered as Apprentices shall meet the following basic qualifications:

1. **WorkKeys Assessments:** Applicant must complete the WorkKeys Assessments; Applied Math, Graphic Literacy, and Workplace Documents, and obtain a National Career Readiness Certificate (NCRC) minimum Score of 5 (Gold NCRC) or better. A copy must be included in their application packet. Tests are timed (55 min. per test) at designated DOL Job Centers or authorized facility \*Career Ready 101 scores will be accepted for individuals not connected to the AK Highway System that do not have WorkKeys testing facilities in their rural community.
2. **Age:** Applicants shall be at least 18 years of age.
3. **Education:** Shall possess sufficient educational knowledge to satisfactorily complete the on-the-job training and related technical instruction. A high school diploma or GED equivalency is required.
4. **Physical:** Shall be physically capable of performing the essential functions of the occupation, with or without reasonable accommodation, without endangering the health and safety of the individual or others.
  - i) Shall complete a Post Offer Health Questionnaire (POHQ) to be reviewed by the Occupational Health Medical Review Officer (**Only if selected into the apprenticeship program.** Approximate cost to applicant is \$40).
  - ii) Shall pass and obtain a medical examiners certificate in accordance with the requirements of the U.S. Department of Transportation, USDOT (**Only if selected into the apprenticeship program.** Approximate cost to applicant is \$110 depending on location).
  - iii) Shall pass a Post-offer Pre-placement Functional Fit Test performed by our affiliate clinic to determine if the person exhibits the abilities to perform the minimum functional demands of the job safely. (**Only if selected into the apprenticeship program.**)
5. **Drug & Alcohol:** Shall obtain and pass drug and alcohol screening (includes UA and Hair Follicle) test in accordance with the USDOT standards and remain in the random screening program. (**Only if selected into the apprenticeship program.** Approximate cost to applicant is \$233 depending on location).
6. **Security Threat Assessment:** Shall be able to obtain and pass a federal background check in accordance with the Transportation Worker Identification Credential (TWIC) to obtain that credential and maintain it in the program.

7. **Driver License:** Shall have a minimum of one (1) year licensed driving experience, and possess a minimum class “D” Alaska driver license for at least thirty (30) days prior to application and maintain that license and any other obtained in the program.
8. **Alaska Resident:** Must be an Alaska resident for 30 days prior to the application period and intend to make Alaska your permanent home.
9. **Clean Driving Record:** Applicant must provide an Alaska Department of Motor Vehicle, Full Individual Driver Record, with application that indicates a clean driving history (Be certain to obtain the correct report from DMV. Approximate cost to applicant is \$10.). Any one of the following list of violations, from date of conviction on a driving record to date of application, will disqualify you as an applicant for the apprenticeship program.
  - A total of 10 points on your driving record in the last two years.
  - A total of three citations in the last three years.
  - A citation for driving while using a wireless phone in the last three years.
  - Two traffic citations, 10 mph over the posted speed limit in a three-year period.
  - Any citation for 15 mph over the speed limit in a five-year period.
  - A suspension or revocation within a five-year period.
  - Any driving under-the-influence conviction within the last five years.
  - Any leaving the scene of injury/property damage/accident, racing, reckless driving, failure to submit to a breath test, or using a vehicle to commit a felony within the last five years.

**Note:** *If accepted into the program, all violations are subject to prospective employer hiring policy discretion prior to offer of employment. Many employers require a minimum 5-year clean driver history.*

**2. TYPE OF OCCUPATION**

- Time-based                       Competency-based                       Hybrid

**3. TERM OF APPRENTICESHIP**

The term of the occupation is approximately three years with an on the job learning (OJL) attainment of 4,000 hours and supplemented by the required hours of related instruction.

**4. RATIO OF APPRENTICES TO JOURNEYWORKERS**

Consistent with proper supervision, training, safety, and continuity of employment throughout the apprenticeship, the ratio of apprentices to journeyworkers employed in each shop, and/or job site will be one (1) apprentice to one (1) journeyworker.

**5. APPRENTICE WAGE SCHEDULE**

Apprentices are paid a progressively increasing schedule of wages during their apprenticeship based on the acquisition of increased skill and competence on the job and in related instruction courses.

Before an apprentice is advanced to the next segment of training or to journeyworker completion status, the program sponsor will evaluate all progress to determine whether advancement has been earned by satisfactory performance in their on-the-job learning (OJL) and in related instruction courses. In determining whether satisfactory progress has been made, the sponsor shall be guided by the work experience and related instruction records and reports.

Period	Wage Percentage	On-the-Job Hours
1 <sup>st</sup>	60%	0 - 1000 Hours
2 <sup>nd</sup>	70%	1001 - 2000 Hours
3 <sup>rd</sup>	80%	2001 - 3000 Hours
4 <sup>th</sup>	90%	3001 - 4000 Hours

The current surveyor journeyworker wage rate is \$31.57\* per hour.

\*The current journey worker wage rates may vary and depend upon the rates contained in the collective bargaining agreement for the particular segment of the construction industry they are working in. The current journeyworker wage rate shall be modified on any prevailing wage project to comply with the applicable wage rate when the prevailing wage is higher than the journeyworker rate specified in the standards.

**6. WORK PROCESS SCHEDULE** (See attached Work Process Schedule)

**7. RELATED INSTRUCTION OUTLINE** (See attached Related Instruction Outline)

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**WORK PROCESS SCHEDULE  
SURVEYOR ASSISTANT, INSTRUMENTS  
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During the term of apprenticeship, the Apprentice shall receive such instruction and experience, in all branches of the occupation, as is necessary to develop a practical and versatile worker. Major processes in which Apprentices will be trained (although not necessarily in the order listed) and approximate hours (not necessarily continuous) to be spent in each are as follows:

<b>WORK PROCESSES SURVEYOR ASSISTANT</b>	<b>APPROXIMATE HOURS</b>
A. Safety Meetings / Traffic Control / First-Aid /Tailgate Safety	100
B. Equipment Maintenance, Calibrate and adjust field equipment	100
C. Finding Monumentation (E.G., boundary, underground utilities, control points)	200
D. Leveling – Rod	200
E. Leveling – Instrument	200
F. Traversing – Rod/Helper	200
G. Traversing – Total Station	200
H. Staking – Rod/Hammer	200
I. Staking – Instrument	200
J. Topographic Survey or As-Built Survey (side shots) Total Station	200
K. Topographic Survey or As-Built Survey – Rod	200
L. GPS – Horizontal or Vertical	200
M. Calculations / computations manual – math/unit conversions, etc.	400
N. Calculations / computations / CADD / Survey Software / Data Collector	800
O. Obtain and process data from Construction Plans or Boundary Survey Plats	200
P. Research, Field work, or Computations – Higher Level	400
<b>Total Hours</b>	<b>4,000</b>

## **Appendix A**

### **RELATED INSTRUCTION OUTLINE SURVEYOR ASSISTANT, INSTRUMENTS O\*NET-SOC CODE: 17-3031.00      RAPIDS CODE: 0551**

Source: Program Sponsor  
Method: Classroom Study and Practical

Alaska Teamster-Employer Service Training Trust  
Cheri Lipps, Apprenticeship Coordinator  
520 East 34th Avenue, Suite 201  
Anchorage, AK 99503  
Phone: 800-478-4233  
E-mail: [c.lipps@acsalaska.net](mailto:c.lipps@acsalaska.net)  
Website: [www.akteamsterstraining.com](http://www.akteamsterstraining.com)

The related instruction outlines the courses that provide the technical ability that supplements the on-the-job training. It is through the combination of both the on-the-job training and the related technical instruction that the apprentice can reach the skilled level of the occupation. Under a registered apprenticeship, 144 hours of related instruction each year of the apprenticeship is recommended. The following is the suggested course curriculum during the term of apprenticeship.

#### **FIRST YEAR APPRENTICE INSTRUCTION AND TRAINING**

1. **SAFETY**
  - a. Attitude
  - b. First Aid/CPR (8-hour)
  - c. Defensive Driving (8-hour)
  - d. NSTC (8-hour) and list of recommended gear for surveyors on the North Slope
  - e. Chainsaw Safety
  - f. Traffic Control
  - g. Job Hazard Analysis – daily tailgate safety meetings
  - h. Wildlife - Bear, Moose, Arctic Fox (rabies), other
  
2. **CARE OF FIELD EQUIPMENT/ADJUSTMENTS**
  - a. Peg Test – adjustment of automatic levels
  - b. Total Station – distance check
  - c. Total Station – PPM and Prism Constant settings
  - d. Check and adjust tribrachs
  - e. Check and adjust rod bulls-eye levels
  - f. Proper method of transporting equipment in the vehicle and on the job-site
  - g. Proper care, charging, and disposal of batteries
  
3. **FIELD SEARCH – SURVEY MONUMENTS**
  - a. Find monumentation from datasheets or field notes
  - b. Use a metal detector to find survey monuments

4. SURVEY COMPUTATIONS
  - a. Review of basic math, algebra, geometry, and trigonometry
  - b. Unit Conversions
  - c. Working with angles
  - d. Perimeter, Area, Volume
  - e. Coordinate Geometry
  - f. Bearings and Azimuths
  - g. Slope and Grade
  - h. Differential Leveling
  - i. Trigonometric Leveling
  - j. Introduction to Horizontal and Vertical Curves
  - k. Slope Staking
  
5. LEVELING AND LEVEL NOTES
  - a. Definitions and Terminology
  - b. Leveling Noteforms
  - c. Level loop using automatic level, compute misclosure, adjust
  - d. Level loop – 3-wire, compute precision, adjust
  - e. Profile Leveling
  - f. Cross-Section Leveling
  - g. Hand Level use
  - h. Slope Staking
  
6. DISTANCE MEASUREMENTS AND TRAVERSING
  - a. Definitions and Terminology
  - b. Chaining
  - c. Total Station, single interior angles, angular adjustment
  - d. Total Station, double angles, close the horizon, angular adjustment
  - e. Total Station with Data Collector, double angles – adjust angles and distances
  
7. TOPOGRAPHIC SURVEY/AS-BUILT SURVEY
  - a. Definitions and Terminology
  - b. Topographic or As-Built Survey with Total Station and Data Collector
  - c. Download, Plot, and Draw
  
8. STAKING AND GRADE CHECKING
  - a. Stake Points
  - b. Slope Stake
  - c. Blue-Tops
  - d. Grade Checking
  
9. INTRODUCTION TO MAPS AND PLANS
  - a. Definitions and Terminology
  - b. Draw Plan and Profile sheets
  - c. Types of Maps and Plans
  - d. Basics of US Public Land Survey System

## **SECOND YEAR APPRENTICE INSTRUCTION AND TRAINING**

1. SAFETY
  - a. Attitude
  - b. Job Hazard Analysis – Daily Tailgate Safety Meetings
  - c. Weekly Safety Meetings conducted by apprentices
  
2. CARE OF FIELD EQUIPMENT/ADJUSTMENTS
  - a. Total Station – Calibration Routine (if available)
  - b. Digital Level Calibration Routine
  - c. Proper care, checks, and adjustments of all equipment (from Year One)
  
3. FIELD SEARCH – SURVEY MONUMENTS
  - a. Finding monumentation from datasheets or field notes - independently
  - b. Use of GPS to aid field search
  
4. SURVEY COMPUTATIONS
  - a. Review of basic math, algebra, geometry, and trigonometry
  - b. Horizontal and Vertical Curves
  - c. Slope Staking
  - d. Coordinate Geometry
  - e. Azimuths and Bearings
  
5. LEVELING AND LEVEL NOTES
  - a. Run Control Level Loop – Automatic Level
  - b. Run Control Level Loop – Digital Level
  - c. Profile Leveling – Automatic Level and Digital Level
  - d. Slope Staking
  - e. Compute Cut and Fill
  
6. DISTANCE MEASUREMENTS AND TRAVERSING
  - a. Run Control Traverse, adjust (Data Collector)
  - b. Use GPS to run Control for a job
  - c. Perform a Site Calibration using the Total Station Traverse and GPS
  
7. TOPOGRAPHIC SURVEY/AS-BUILT SURVEY
  - a. Topographic Survey using GPS and Total Station
  - b. Download, Design Road – Horizontal and Vertical alignments, template
  
8. STAKING
  - a. Stake Road centerline using uploaded alignment
  - b. Slope Stake using uploaded alignment
  - c. Stake curb and gutter
  - d. Blue-Tops



9. MAPS AND PLANS

- a. Mapping and scale
- b. Contours
- c. Stationing
- d. Interpret data from construction plans

10. SURVEY THEORY

- a. Datums and Projections
- b. State Plane Coordinates
- c. Basics of the US Public Land Survey System
- d. Basics of GPS/Geodetic Surveying
- e. Basics of Boundary Surveying
- f. Data sources – BLM, DNR, NGS, etc.