COMMUNITY JOB READINESS AND WORKFORCE NEEDS ASSESSMENT

Local Labor Hiring Provisions on Central 70

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Community Job Readiness and Workforce Needs Assessment

LOCAL LABOR HIRING PROVISIONS ON CENTRAL 70

PROJECT BACKGROUND

In February of 2016, the Colorado Department of Transportation (CDOT) received approval from the Federal Highway Administration (FHWA) to implement a local labor hiring preference for the Central 70 Project. This approval was granted under a one-year program (Special Experimental Project No. 14—Local Labor Hiring Pilot Program) created to encourage state transportation departments to pilot local hiring provisions on projects receiving Federal funding (providing that such projects apply and receive FHWA approval).

In order to support successful design, implementation and evaluation of local hiring preferences for Central 70, CDOT contracted with the Community College of Denver's Center for Workforce Initiatives to advise the Department on an appropriate goal and to prioritize programmatic recommendations. This report summarizes this work, including data and insights collected through:

- 20 targeted neighborhood statistical profiles;

- 15 focus groups with 147 participants;

- 528 unique resident surveys;

- 69 stakeholder interviews; and

- Four employer focus groups and/or interviews with regional contractor organizations.

The insights shared by neighborhood residents, community organizations, education and training partners, civic leaders, and local employers supported the identification of goal recommendations and program action strategies related to the outreach, training and skills development, and supportive resources needed to help residents attain and retain employment on Central 70.

A 2012 report issued by the National Skills Coalition cautioned that federal investments that create jobs and federal investments that prepare people for jobs are not always aligned. [1] This can lead to a disconnection between economic development initiatives such as infrastructure expansion and workforce development priorities that build the skills and increase the earning potential of community residents. Through thoughtful collaboration, the approved Local Labor Hiring pilot can help CDOT and its partners bridge workforce and economic community development efforts. The alignment of training and job opportunities that help local residents in low-income neighborhoods to access training, high-quality jobs with connected career pathways, increases not only individual economic mobility but also the number of skilled workers to fulfill future project needs.

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SECTION 1: INTRODUCTION AND PURPOSE

According to the federal Department of Transportation (DOT), every $1 billion in public infrastructure spending creates 13,000 direct and in-direct jobs that provide ladders of opportunity into middle-class career pathways [2]. DOT estimates that in addition to jobs created through new infrastructure investments, transportation employers will need to hire over 4.6 million workers—1.2 times the current workforce—to adequately address growth, retirements, and turnover [3].

The DOT established a pilot program in 2015 to allow local hiring preferences on Federal Transit Administration (FTA) or Federal Highway Administration (FHWA) projects. This step was taken to capitalize on the role transportation plays in connecting communities to better access and economic opportunity, and to support the successful recruitment and upskilling of new and current workers. At a time when the nation faces significant infrastructure repair costs, DOT's Local Hire Initiative intends to fund these projects in a way that simultaneously expands economic opportunity and socioeconomic mobility. In 2015, the Colorado Department of Transportation (CDOT) applied to incorporate Local Labor Hiring Preference (LLHP) contract provisions to the $1.17 billion Central 70 Project. CDOT's project was one of nine projects nationally selected to participate in the pilot.

Central 70 is a unique multi-year project that will impact some of the oldest neighborhoods in Denver, which contain high concentrations of low-income residents. The current plan for this design-build-finance-operate-maintain project will reconstruct I-70 East in the metro Denver area between Brighton Boulevard and Chambers Road, one of the most congested highway corridors in Colorado. Through implementation of local hire practices, large scale infrastructure investments such as the planned Central 70 roadway expansion can provide jobs and career pathways in construction to benefit residents and contractors.

Effective local hire programs can connect residents of communities with high unemployment to new career opportunities. It also creates a pipeline for a future workforce addressing the needs of local workers and businesses. [4]. DOT's approved Local Hire Initiative, provides CDOT an unprecedented opportunity to leverage funds to expand Colorado's signature roadway into local jobs and economic growth for under-served communities along the Central 70 corridor. To capitalize on this opportunity, CDOT contracted with Community College of Denver's Center for Workforce Initiatives (CWI) to perform a Community Workforce Needs Assessment to define an appropriate LLHP goal and to identify programmatic recommendations based on assessed gaps and available resources.

Project Need

Local hire provisions provide clear education and economic opportunities for community residents. Local hire programs in construction lead to jobs with family-sustaining wages and benefits. Through training, workers become qualified for these available positions, increasing workers' earning potential both in the short and long-term [5]. Additional benefits realized through LLHP include:

- Community economic growth—more jobs within a local hiring area lead to increased wages and purchasing power

- Educational expansion—local hire ensures more access to training to qualify for positions and collaboration between education stakeholders may result in new training activities

- Workforce expansion—aligned resources and training support for foundational skills and upgrades can deliver a pipeline of prepared workers to area contractors at multiple skill levels. New worker

preparation reduces turnover and increases employer competitiveness, which leads to more long-term hiring opportunities for local residents and a pool of qualified workers for future CDOT projects.

Central 70 contractors will be faced with hiring challenges. Construction activity is at a high level creating increased demand for skilled labor while an aging construction workforce creates the need for a reliable pipeline of new workers. According to the Colorado Department of Labor and Employment (CDLE), the 2014-2024 long-term projected employment for Construction of Buildings in the Denver – Aurora- Broomfield MSA indicates an annual average percentage increase of 4.23% and a total employment change of 6,994 positions. Heavy and Civil Engineering Construction will see a 3.44% annual increase and a 10-year increase of 40.27% or 4,429 positions in the same time period. [6] This growth in industry employment trends are based on higher-than-average increases in residential construction due to limited housing supply, as well as regional infrastructure initiatives such as RTD's FasTracks and Central 70.

 During a time of increasing industry demand and growth in positions, CDLE data indicates that Colorado's construction workforce is continuing to age across all sub-sectors. A 2015 labor market study commissioned by the Colorado Associated General Contractors (AGC) revealed that the percentage of construction workers age 55 and older increased by 6% between 2004 and 2013, while the percentage of workers age 34 and younger decreased by 5% [7]. Between 2005 and 2015, the share of construction workers in the City and County of Denver between the ages of 55 to 64 increased from 11% to 16%, as detailed in **Table 1**. The percentage of workers between the ages of 25 and 54 fell from 51% in 2005 to 47% in 2015. The share of workers age of 25 or younger has remained stagnant at 10% or lower since 2005, though it indicated an upward trend from 8% in 2013 to 10% in 2015.
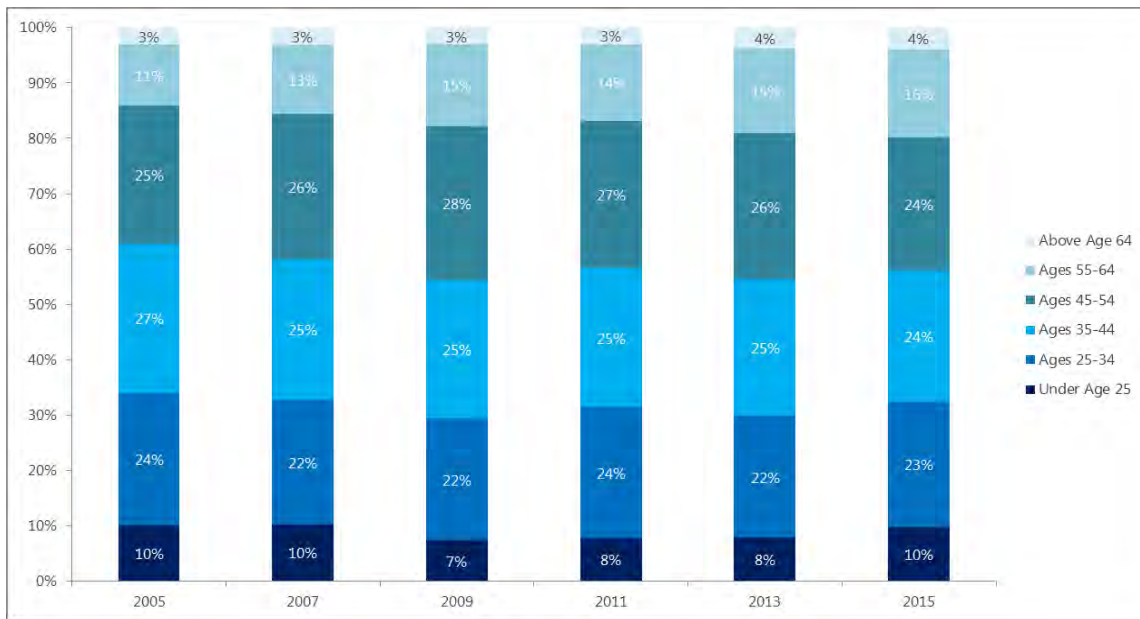
Table 1. Distribution of City and County of Denver Construction Workforce by Age Group, 2005 - 2015
Source: QWI Explorer application, U.S. Census Bureau

AGC Colorado estimates currently only one worker enters a trade field for every four workers that leave or retire. [8]   These labor shortages and strong industry growth are already leading to project delays and cost overruns for metro Denver employers in construction and heavy civil construction sectors. In the 2016 AGC Colorado Workforce Survey 89% of AGC member firms in Colorado indicated they are having difficulty filling some hourly craft positions. [9]

The construction industry provides a critical career pathway to the middle class. Positions provide family-sustaining wages and health benefits. There are low educational barriers to entry, and established career pathways for hired individuals to advance. Yet in a period of strong industry demand, training and workforce preparation pipelines are shrinking. Traditional training programs are closing due to cost barriers, or have stagnant enrollment and cite difficulty in recruiting new participants. High schools are providing fewer opportunities to learn traditional trades as their focus emphasizes college preparation. A successful local hire initiative creates an opportunity to address both contractor and resident needs by expanding the pipeline of trained or up-skilled workers to meet employer needs and address workforce gaps in critical positions. [10]. Local hire provisions on Central 70 will align skills development and employment opportunities with higher than average concentrations of unemployed and underemployed metro Denver residents, resulting in an expanded workforce pipeline.

Research indicates support from residents, stakeholders, and employers for the proposed provisions outlined in this assessment. 85% of surveyed residents support provisions that would prioritize a portion of employment opportunities for residents impacted by the project. Within focus groups and stakeholder informant interviews, the most frequently cited community benefits of LLHP on Central 70 were (1) access to better jobs with good wages; (2) increased economic impact in disadvantaged communities through higher rates of employment of community residents; (3) increased long-term income potential through training and work experience that results in transferrable skills. Employer focus groups and economic development stakeholders indicated the primary perceived benefit was the development of a more skilled pipeline of workers to drive future construction workforce growth.

Assessment Purpose

In order to define an appropriate local hire goal for Central 70 and to identify programming resources, CDOT released a request for proposals to complete a Community Job Readiness and Workforce Needs Assessment. Community College of Denver's (CCD) Center for Workforce Initiatives (CWI) was selected to perform the assessment, with a coalition of local service partners along the corridor. Additional partners included Denver's Office of Economic Development—Workforce Development, Focus Points Family Resource Center, Colorado Construction Institute, Mi Casa Resource Center, the Urban League of Metropolitan Denver, and Community College of Aurora. Assessment work plan components and outcomes are detailed below.

- Community Baseline Data

  o Collect demographic information on targeted neighborhoods to demonstrate need; *CWI worked with the Piton Foundation Data Initiative Community Facts briefs to assemble and assess neighborhood profiles*

- Community Assessment of Career Interests, Training Needs and Resource Gaps

  o Coordinate resident focus groups in corridor neighborhoods; *CWI and partners hosted 15 focus groups in neighborhoods along the corridor with 147 unique participants, 71% reside in priority neighborhoods*

  o Prepare, distribute and analyze a resident survey in paper and digital formats, and available in English and Spanish; *Digital and paper survey launched with 528 unique responses collected to date; 66% reside in priority neighborhoods*

  o Conduct stakeholder interviews with community organizations and civic leaders; *CWI invited 85 stakeholders to participate in individual interviews, and 69 interviews were completed.*

- Employer Assessment of Position Opportunities

  o Conduct a minimum of three employer focus groups to determine anticipated employment opportunities, skill sets needed, and potential employment barriers. *Completed three focus groups with a total of 14 business participants—convening partners included Associated General Contractors- Colorado, Black Construction Group, Colorado Building Trades Training Directors Association , Colorado Contractors Association, and Hispanic Contractors of Colorado*

- Existing Training Resources

  o Prepare comprehensive list of existing opportunities in construction and professional services training, work readiness skills development, and supportive resources. *Compiled resource list of regional programs detailed in **Attachment A**.*

- Identify gaps in current available training and propose training or resource activities to bridge anticipated skills gaps. *CWI staff assessed business and resident focus group data, ACI 2014 demographic data, as well as stakeholder interviews, and compared this with project scopes to identify the priority needs proposed in this report.*

- Goal and Program Recommendations

  o Provide estimated workforce hours to be fulfilled by local residents within targeted neighborhoods. *Recommended goal is included in report.*

  o Prepare initial recommendations on programming and resources to support contractors in meeting and exceeding set goals; *CWI analyzed original data sources, local organization capacity, and national best practices in local hiring to identify implementation recommendations included in Section 4 of this report*

This assessment is structured to:

- Identify the need for and value of the proposed local hire program
- Summarize demographics of the proposed target population/neighborhoods
- Highlight key findings from stakeholder data analysis
- Identify LLHP goal and make programmatic recommendations.

The report provides CDOT with informed recommendations to define local hiring provisions for Central 70, including target population, goal utilization, service and structure components, and opportunities for resource alignment to address identified gaps.

Data/ Resources Methods Used

CWI staff assessed existing data sources and performed new data collection to design this report. Original data collection methods focused on three primary stakeholder groups—residents, key informants, and employers. Informants include training providers, community or faith-based organizations, trade associations, direct service providers, civic leaders, elected officials, and economic development organizations. Data collection tools used are summarized in **Table 2**. Focus Groups were conducted in English-Spanish and the survey was provided in digital and English-Spanish written formats.

	Focus Group	Individual Interview	Survey
Employers	X		X
Key informants		X	
Residents	X		X

Table 2: Data Methods Used for Original Data Collection

Neighborhood and demographic data profiles were prepared in collaboration with Community Facts, a data initiative of the Piton Foundation that details neighborhood data for the seven-county Denver Metro Region. Economists with the Denver Office of Economic Development and AD Works assisted with labor market information data collection. Additional data sources include comprehensive reviews of neighborhood and economic development plans from the cities of Denver, Aurora, and Commerce City. A complete list of reviewed sources are included in **Attachment B**. A list of interviewed informants and a demographic breakdown of focus group and survey participants are included in **Attachments C and D**.

SECTION 2: COMMUNITY DATA—DEFINING THE TARGET POPULATION

To provide a base-line understanding of potential gaps and local needs for a place-based hiring program, CWI staff supplemented original data collection with the assessment of demographic profiles for an expansive set of metro Denver neighborhoods. Data profiles were prepared in partnership with GCI. Staff reviewed basic demographic indicators and assessed patterns that crossed multiple neighborhoods.

In the current work plan submitted to USDOT, CDOT proposes a local labor hiring preference targeting residents in the environmental justice (EJS) study area identified in the I-70 East Environmental Impact Statement. This includes the following neighborhoods—Globeville, Elyria and Swansea, Northeast Park Hill, Montbello, Gateway / Green Valley Ranch, and portions of Aurora (including Chambers Heights, Laredo Heights, Delmar Parkway, Jewell Heights, Hoffman Heights, Montview Park and North Aurora). CWI recommends an expanded geographic area for consideration based on multiple factors. Given the current metro-wide unemployment rate of 3.1% in March 2016, the fore-mentioned areas, while directly impacted by construction efforts, will likely represent too small a pool of job seekers to set a worthwhile and achievable goal. Stakeholder identified numerous challenges to implementing a successful program in a narrowly focused geographic corridor. The challenges include:

- Resident and customer priority interest in other industry sectors or career pathways

- High levels of undocumented workers in target neighborhoods that would not be eligible to work on a federal project

- Some neighborhoods in the EJS boundary, while located adjacent to project and experiencing direct impacts of construction and development, have more stable employment levels

A narrow geographic focus may restrict project contractor candidate selection for project contractors based on reasons cited above. Moreover, rapid gentrification of the EJS neighborhoods is forcing low-income families to relocate to adjacent neighborhoods in search of affordable housing. This trend is expected to accelerate as the metro Denver housing prices continue to increase and Central 70 proceeds. Limiting the local hire provision to EJS neighborhoods only may exclude former residents in need of training and employment opportunities to build sustainable career pathways.

Based on these factors, the assessment team recommends the expansion of the primary geographic area to include the adjacent neighborhoods identified below:

- Chaffee Park (Census Tract 08031000201)

- Clayton (Census Tract 08031003602)

- Cole (Census Tract 08031003601)

- Commerce City (Derby –Census Tract 08001008901 and South—Census Tracts 08001008705, --8706 and -8709)

- East Colfax (Census Tracts 08031004403 and 08031004404)

- Five Points (including Curtis Park; Census Tract—08031002403)

- Sunnyside (Census Tract 08031000202)

- Whittier (Census Tract 08031002300)

These recommendations are based on data indicator comparisons across the metro Denver region, stakeholder input from key informants and from regional economic and workforce development experts within Denver's Office of Economic Development. Proximity to the Central 70 project corridor was also considered. The proposed additions add 61,630 residents over the age of 18 for consideration, for a total pool of 178,236 individuals over the age of 18.   The expanded area is indicated in **Table 3**
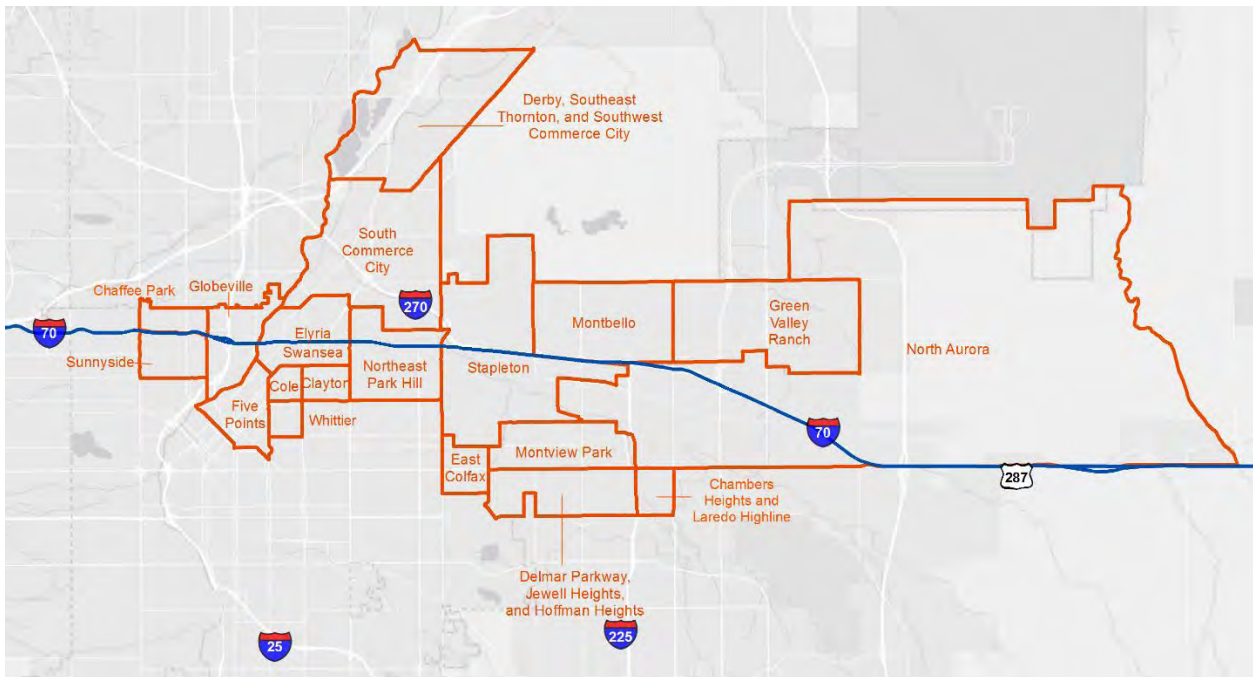
<div align="right">Table3: Target Neighborhoods Map</div>

While CWI recommends expanding the target population area of community residents, organized outreach and training locations should be prioritized within the core EJS neighborhoods to maximize awareness of, and participation in skills development and employment opportunities by these residents. The proposed geographic target hire area is defined by neighborhood and zip code **Attachment E.**

The critical need to access high-wage opportunities, such as those associated with infrastructure construction, is underscored when comparing neighborhood unemployment and poverty rates, as identified in **Table 4**. In the 2014 census, the unemployment rate in Denver was 7.76% and the percent of residents living in poverty was 13.72%.

Table 4: Neighborhood Unemployment and Poverty Rates

Neighborhood	Percent in Poverty	Unemployment rate
Denver County	13.72%	7.76%
Chaffee Park	7.55%	6.55%
Chambers Heights and Laredo Highline (EJS)	27.56%	12.03%
Clayton	24.06%	18.13%
Cole	25.87%	11.70%
Delmar Parkway, Jewell Heights and Hoffman Heights (EJS)	24.51%	11.29%
Derby-Commerce City	23.90%	13.40%
Elyria-Swansea (EJS)	33.65%	15.24%
East Colfax	35.96%	14.37%
Five Points	25.69%	6.62%
Globeville (EJS)	30.91%	15.42%
Green Valley Ranch (EJS)	5.88%	6.81%
Montbello (EJS)	25.19%	12.39%
Montview Park (EJS)	36.21%	14.91%
North Aurora (EJS)	17.40%	13.13%
Northeast Park Hill (EJS)	25.23%	14.80%
South Commerce City (EJS)	22.64%	13.27%
Stapleton (EJS)	3.33%	3.45%
Sunny Side	20.20%	11.82%
Whittier	18.48%	13.94%

Source: ACS 2014

Local hire provisions recognize that economic disadvantage occurs both because of personal challenges and location [11]. A complete set of comparable data indicators justifying neighborhood need and inclusion is detailed in **Attachment F and G** for the EJS corridor neighborhoods and proposed additional neighborhoods respectively. These indicators were selected by GCI, CWI and CDOT, to be the most informative in identifying education and employment needs. Selected indicators include:

- Population 18 years and older

- Average Household Income

- Households with Income less than 100% of Denver's Median Income (< $60,000)

- Families in Poverty

- Unemployed in Civilian Labor Force

- % of commuting via public transportation

- Licensed Child Care Slots

- Educational attainment

- Race and Ethnicity population

- Adults Non-English Speaking

- Foreign Born

Multiple demographic data indicators suggest that the identified neighborhoods face specific challenges associated with economic self-sufficiency, including:

- Higher than average levels of unemployment (with the exception of Five Points, Stapleton and Gateway);
- Use of public transportation at higher rates, which may restrict employment choices;
- Higher concentrations of family poverty and lower than average family income levels;
- Lower than average educational attainment rates; and
- Higher than average non-native English speakers.

Such indicators suggest that skills development and work preparation activities combined with local employment opportunities with strong wages could positively impact employment and income outcomes for the targeted neighborhoods. Because of low educational attainment rates and high numbers of speakers of other languages within the targeted neighborhoods, it is anticipated that contextualized adult education that bridges into career training programs will represent a significant need. In the next section, this data is supplemented by direct reflections and recommendations from residents and organizations related to position interest, skills and experience, training needs, resource gaps, and success indicators.

SECTION 3: FINDINGS FROM COMMUNITY AND CONTRACTOR DATA

Attitudes and Interests

Residents indicated strong interest in career opportunities associated with Central 70—over 90% of focus group participants expressed a desire to learn about and apply for posted positions and a combined 76% of survey respondents said they would be "very likely" or "likely" to apply. The top three preferred position categories were (1) Office positions, (2) Construction Craft—Equipment Operator and (3) Professional Services—Marketing and Public Information. Attitudes associated with construction craft position categories were wide-ranging and may influence interest in craft-related training or employment opportunities. **Table 5** demonstrates the frequency of responses to questions related to construction industry perceptions across the 15 focus groups. Perceptions emphasized in at least 40% (6), of the focus groups are included.
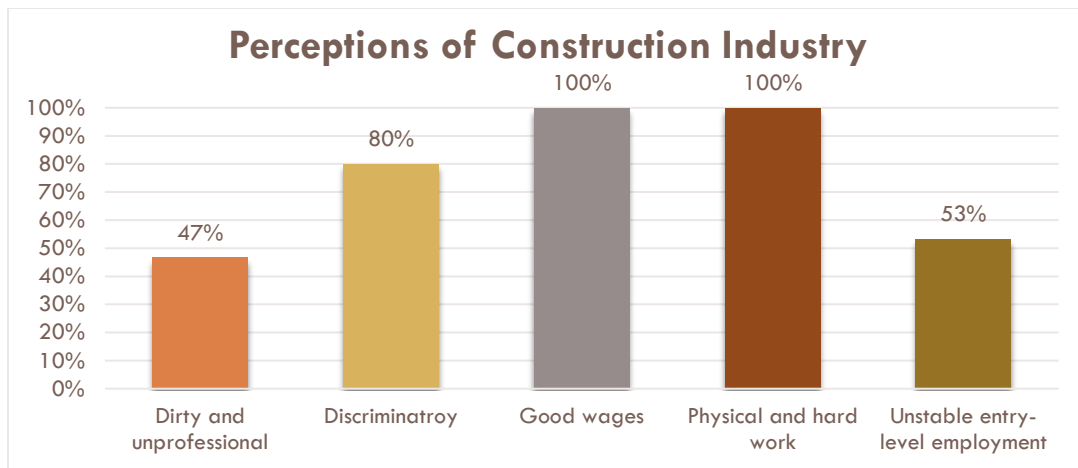
Perceptions of Construction Industry

Table 5: Perceptions of the Construction Industry

Overall, these perceptions indicate there is a strong need to educate both residents and community training programs on positive aspects of the industry, industry pathways, and industry benefits. Moreover, it will be critical to impart to stakeholders that local hire provisions can support career opportunities, long-term career development, and expanded training infrastructure in order to sustain a sufficient pool of interested and qualified candidates. Finally, it will be important to detail realistic work expectations and the full range of positions within the broad industry, including skilled crafts, supervisory, business operations, and professional design services.

The perception that the construction industry was discriminatory, a theme prevalent in 80% of the focus group discussions, was further underscored in stakeholder informant interviews. When asked to define how their customers or constituents describe the industry, the third highest descriptor was "discriminatory" at 21% (which interviewees defined as sexist or racist). This suggests a need for specific outreach and programming strategies to address the institutionalization of perceptions and behaviors that may become a barrier to recruiting and retaining workers. Recruitment and career outreach activities should be deliberate in including women and people of color representing all levels of career pathways, including apprentices, skilled journey workers, supervisory and safety personnel, and company owners. Programming strategies include on or off-site mentoring to support new and existing workers who may feel isolated or underrepresented in the construction industry culture.

Strategies to specifically promote and support an inclusive industry environment will also support a more diverse workforce—a 2015 federal assessment of state-wide CDOT projects indicated that in July of 2015 (considered peak employment season) 12.9% of employed workers were female, primarily represented in the unskilled-laborer classifications. 53% of employed workers were people of color and of that, 86% were of Hispanic or Latino descent, primarily represented in the unskilled laborer classifications. Mentoring, networking and training opportunities not only increase other underrepresented populations, but also support all underrepresented populations in career advancement and entry into skilled and professional service classifications.

It is noteworthy that, when asked about impressions related to industry wages, the two most popular responses in stakeholder interviews were opposites—"high wage career opportunities" and "low-wage temporary jobs." This reinforces the reality that in the current economy there are two types of construction jobs—those that pay well with benefits and long-term development opportunities, and lower-paying, low-quality seasonal or temporary jobs [12]. Career and industry outreach should emphasize the high-wage, long-term stability potential of a Davis Bacon infrastructure construction project.

Position Opportunities

The Central 70 LLHP will encompass design and build scopes, including positions classified as both skilled and non-skilled. Typical position classifications on civil infrastructure projects include Skilled Crafts (Ironworkers, Electricians and Equipment Operators), Laborers, First-Line Supervisors, Truck Drivers, Engineers, Engineer-In Training (EIT), Surveyors, and Environmental Scientists. An alignment of self-reported experience levels in resident surveys and skills levels of job seekers registered in the state workforce Connecting Colorado database suggests that priority occupations with larger pools of available qualified workers include General Laborers, On-the-Job Trainees or apprentices, CDL-certified Drivers, Office Administrative Assistants, Bookkeeping and Payroll Clerks.

Data from the 2014 American Community Survey (ACS) indicates resident employment across multiple industry sectors. Individuals indicating employment in construction and related industries are summarized in **Table 6**. These findings suggest a pipeline of candidates with some industry experience to support further occupation-specific training. Globeville, for example, had an estimated 273 residents reporting earned income from the construction industry in the 2014 data. A similar table categorizing the information by zip code, and including office and management positions per sub-sector is included as **Attachment H**.

Neighborhood	Estimate; Total Population 18+	Estimate; Total Construction	Estimate; Total: - Transportation and warehousing, and utilities	Estimate; Total: - Professional, scientific, and management, and administrative and waste management services	Estimate; Total: - Natural resources, construction, and maintenance occupations:	Estimate; Total: - Production, transportation, and material moving occupations:
Chaffee Park	1997	131	116	250	282	181
Chambers Heights and Laredo Highline	2260	433	160	234	510	120
Clayton	1973	87	27	488	121	108
Cole	2166	111	65	294	115	154
Delmar Parkway, Jewell Heights, and Hoffman Heights	10349	1957	574	1580	2493	290
Derby, Southeast Thornton, and Southwest Commerce City	3883	492	428	512	653	216
East Colfax	5369	394	220	900	420	150
Elyria Swansea	2320	423	80	316	499	146

Five Points	9283	185	315	2400	183	202
Gateway - Green Valley Ranch	16962	940	1663	2408	1413	432
Globeville	1399	273	129	98	317	94
Montbello	12611	2283	1290	1426	2453	343
Montview Park	8742	1811	366	889	2053	245
North Aurora	8466	1080	843	1169	1238	229
Northeast Park Hill	3355	206	119	442	204	158
South Commerce City	7804	1175	725	925	1456	284
Stapleton	7136	113	255	1486	28	77
Sunnyside	5110	408	261	686	528	162
Whittier	3285	81	57	577	68	182

Table 6: Neighborhood employment in related industries

From a demand perspective, interviewed civil contractors indicated they struggle to find reliable equipment operators or truck drivers most frequently. Employers often encounter a skills mismatch in applicants seeking supervisory or craft management positions—i.e. book knowledge but limited field experience. Within professional services scopes, field technicians were cited as the most hard-to-fill position given the position requires both scientific and technical aptitudes, in addition to field work and physical labor skills. In the previously cited AGC Colorado Workforce survey, members cited carpenters, concrete workers, electricians, laborers, and truck drivers as the most difficult to fill craft positions. [13].

These position opportunities align with regional economic data indicating the top occupation needs within heavy highway industry sectors. The top ten employing occupations in the Denver-Aurora-Broomfield MSA are identified in **Table 7**. The top positions in high demand representing both skilled and unskilled classifications in the heavy highway industry include laborers, equipment operators, first-line supervisors, line installers and repairers.
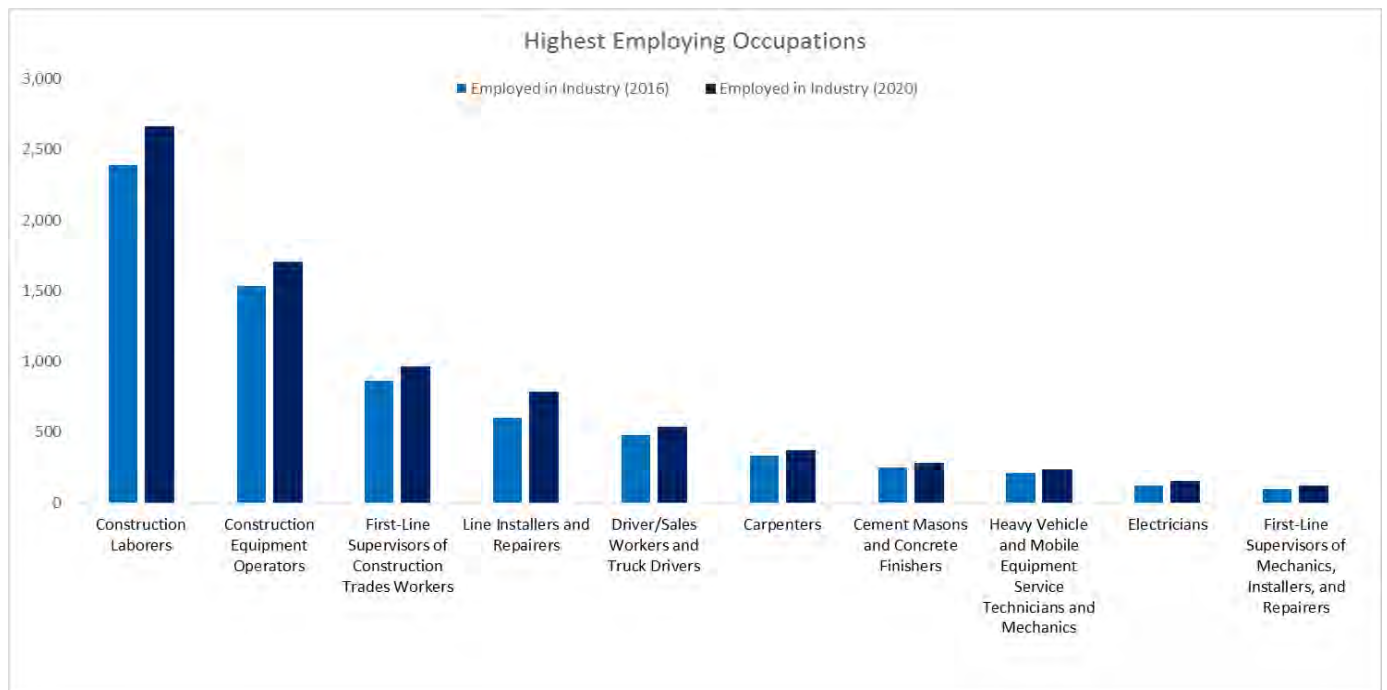
Table 7: Highest Employing Heavy Highway Occupations
Source EMSI

Occupation growth for these positions ranges from 4 to 12% from 2016 to 2020. Focusing LLHP craft training and industry expectations on these ten civil construction occupations would ensure participants attain transferrable skills to support overall construction craft industry workforce needs and bring in-demand experience to area employers on subsequent projects.

Training Needs

Demographic and original data suggest that robust training will be critical to success of the program. Stakeholders posited that lower than average educational attainment and high percentages of non-English speakers indicate that Adult Basic Education (ABE) activities such as reading, math, and English language may be foundational to participant success. ABE partners should be included in training development discussions to ensure activities align efficiently into technical skills training and are included in the resource list.

Training infrastructure providing foundational skills development and upskilling activities for new and current workers is limited. 49% of AGC Colorado members rated the adequacy of the local pipeline for supplying well-trained craft personnel as "poor." [14]. The use of existing training providers will support a system approach to meeting industry workforce needs, help to leverage Central 70 training resources, and limit duplication by providers. This project can and should serve as a catalyst for launching new programming as well. Providers of related technical training and general work skills development are included in the fore-mentioned resource list (Attachment A).

While the previously cited ACS data indicates some levels of industry-related employment within the targeted zip codes, significant numbers of resident survey respondents indicated no experience in four key occupation areas, as identified in **Table 8**. This emphasizes the importance of pre-employment training to prepare new workers and also upskilling opportunities to assist experienced entry-level workers advance and expand skillsets.
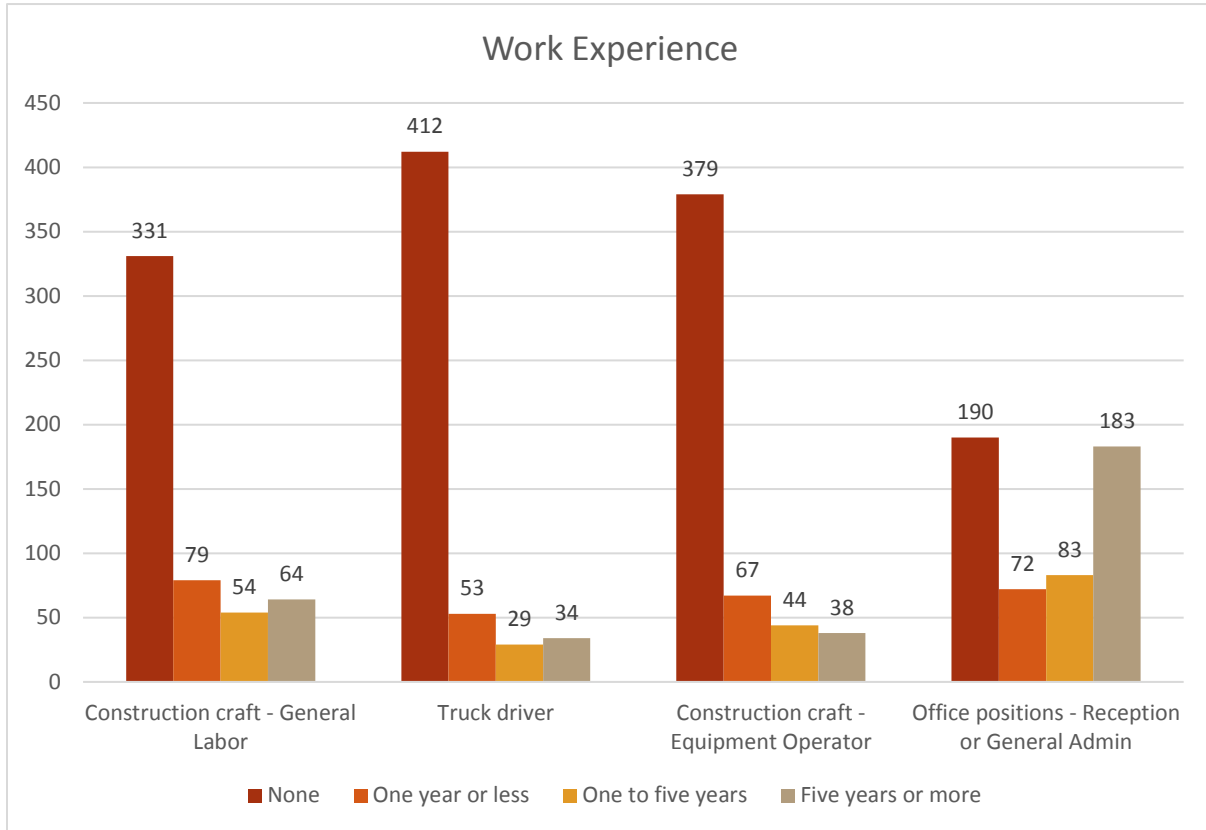
Work Experience

Table 8: Reported Work Experience in Survey Respondents

Structured earn and learn employment opportunities such as registered apprenticeship, and CDOT's On-the-Job Trainee (OJT) classification can provide a framework for upskilling and for introducing employees with minimum experience into the industry in a safe and supportive structure. It should be noted that in administrative positions, residents indicated higher levels of experience at one to five years, or five years or more. This indicates professional service opportunities on Central 70, including office positions, may attract more experienced candidates and workers interested in advancing into new opportunities within this cluster.

Focus groups in particular indicated strong interest in pursuing training that is linked to accelerated employment pathways. Training through an industry-focused local hire program was perceived as more likely to result in employment options than standard training pathways. Focus groups placed high priority on training offered in multiple time formats, including evening and weekend. This is particularly critical given the need to attract under-employed individuals to these opportunities, who may be working and must continue to receive wages to provide family support. Focus groups also indicated strong preference for localized training options along the corridor, within a maximum radius of three miles from the Central 70 project.

Table 9 indicates recommended training priorities based on themes collated from informants and employers. Identified courses were highlighted at least five separate times as those most likely to prepare individuals for successful employment and provide them with transferable skills applicable to other projects.

Stakeholder and Focus Group Training Priorities

Training Priority	Value
Basic Math	5
Basic Office Skills/Payroll	8
Basic Safety	15
CDL/Equipment Operator	11
Industry Specific Communication	5
Industry Work Expectations	16
Pre-apprenticeship Core Technical Skills	29
Skilled Craft Training	20
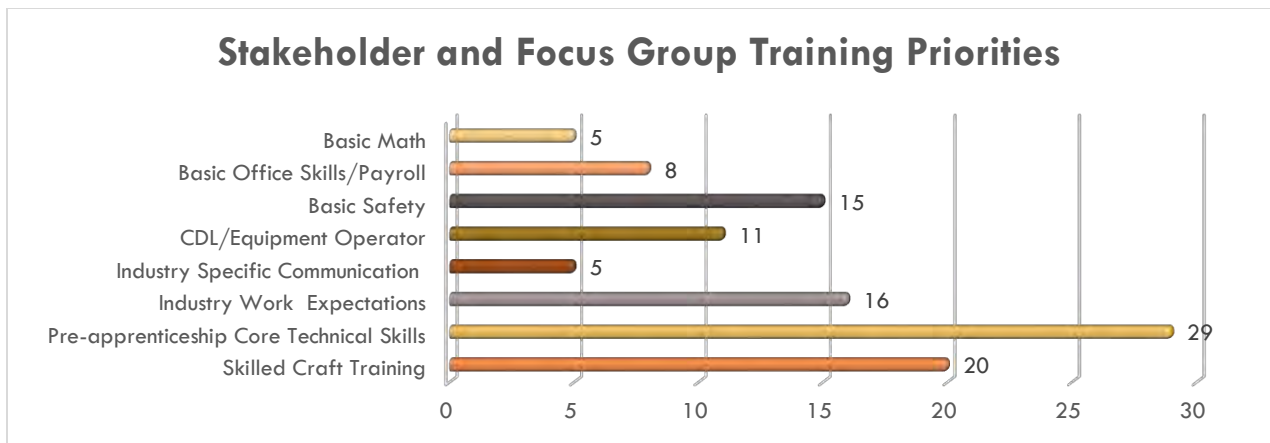
Table 9: Identified Training Priorities

By comparison, **Table 10** indicates resident training priorities as identified by survey respondents. Key areas of overlap between the two data sets are Safety, Heavy Equipment Operation CDL, and core or basic construction skills training.

What type of training is most important to help local residents prepare for jobs on Central 70?	
528 out of 528 people answered this question	
Advanced safety certifications (HAZWOPPER, OSHA 30)	227 / 43%
Basic computer training	208 / 39%
Basic construction skills	234 / 44%
Basic safety (OSHA 10 and First Aid)	217 / 41%
Basic welding	153 / 29%
CDL B heavy equipment certification	142 / 27%
Flagging	156 / 30%
General office skills	180 / 34%
Introduction to equipment operation	148 / 28%
Microsoft Office skills training	151 / 29%
Project management skills	156 / 30%
Small business development	133 / 25%

Table 10: Resident Training Priorities

Employers cited top training priorities as CDL B, CDL A, emerging industry technology platforms, and core safety certifications. Employers and trade associations emphasized the need for flexible training options that support the development of both candidates in a new hire pipeline, as well as existing workers. Additionally they emphasized the need for transferrable training and certifications that support the needs of construction employers as a collective industry, as opposed to proprietary knowledge.

Training activities in support of Central 70's LLHP should include curriculum development or enhancement, alignment of existing program offerings, and the launch of new programming. While preparing content for key courses, an excellent industry-endorsed primer of the skills and knowledge needed to enter civil construction employment successfully is the Heavy Highway Career Competency Model, included as

Attachment I, which was designed by Department of Labor staff and employer associations including the national Associated General Contractors (AGC).

Recruitment and Outreach Priorities

Effective outreach and recruiting strategies will be key to overall LLHP implementation. Informant interviews reinforced the concept that informal network sharing is a highly effective communication tool in many communities along the I-70 corridor. Church congregations, neighborhood access points including libraries, and parent groups at local schools are primary sources of information. Moreover, a broad range of stakeholders including community coalitions, training organizations, the public workforce system and unions each play an important role in facilitating targeted outreach to connect low-income workers with jobs and skills development opportunities [15].

While more traditional marketing approaches including print, radio and social media do have value, both stakeholders and residents indicated regular use of word of mouth strategies and self-directed resources such as websites. In some cases there is a higher level of trust for information received through community networks as opposed to formal marketing. Survey results related to communication preferences are detailed in **Table 11**. Focus groups underscored the preferred communication methods of direct service providers, website postings, or friends or family members. Employers also stressed the importance of word of mouth connections, identifying their own employees as some of their most effective recruiting sources. While this can be a resource to capitalize on, it also presents a risk that underrepresented populations who lack friend or family networks currently employed in construction will remain unaware of opportunities.

Preferred Outreach Recruitment Methods

Method	Value
Website	254
Call	157
Word of mouth	155
Community Organizations/Faith-based Organizations	144
Service Providers (Workforce Center or Housing Authority)	125
Information fairs	125
Flyers in neighborhood locations	110
Text	104
Faith-based Groups	72
Social Media	35
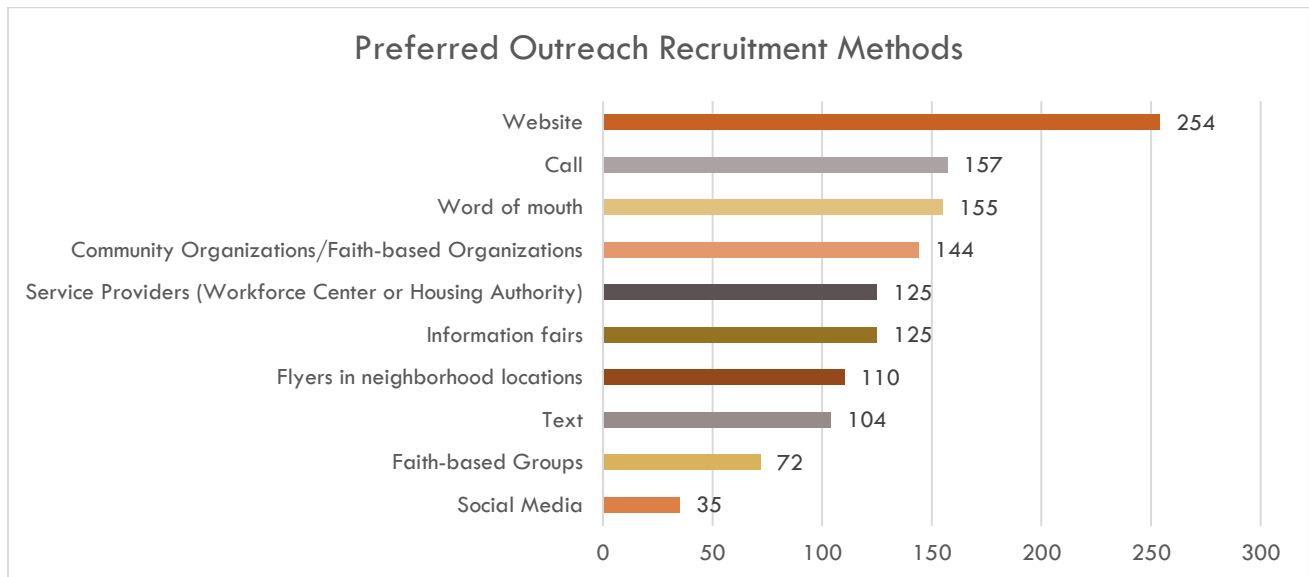
Table 11: Preferred Outreach and Recruitment Methods

74% of survey respondents indicated they would use an app to access basic information regarding training and job opportunities. Focus group participants were also supportive, but identified concerns related to data usage. While technology tools such as apps and websites could be useful to transmit basic information, they must also be promoted to and utilized by neighborhood and community resources that support digital access.

Organizations that could assist in outreach and recruiting efforts are indicated in the prospective resource list included as Attachment A. CDOT should further consider partnering with established peer-to-peer community

networks such as *Las Promotoras* of GES Right to Live Well to assist in sharing workforce information through informal networks.

Employment Barriers and Resources

A strong local hire program will provide contractors with qualified applicants who are prepared to work in the construction industry. Data collection indicates this preparation must include not only skills training but also aligned resources to minimize barriers to successful employment and retention.

Specific barriers to finding and keeping good jobs were identified by stakeholder organizations and community residents located within targeted neighborhoods. These challenges included: lack of skills or experience to apply for high-quality jobs, lack of affordable child care or housing, lack of transportation or long transit commutes, criminal backgrounds, limited access to non-seasonal work, lack of financial literacy, and limited access to resources to problem-solve and address personal emergencies. From an employer perspective, failure to pass drug tests, lack of experience, and lack of resources to resolve personal emergencies were the primary observed barriers to successful employment as identified in focus groups.

Employers participating in focus groups indicated that an employee who persists at least three months in a position is more likely to be retained. Employers are more likely to invest time and money in thorough on-the-job training and coaching for these employees. CWI asserts that supportive services and post-placement resources are critical to prepare residents for available positions and to enhance retention and limit turn-over once employed. Priority resources identified most frequently through all three data sources included:

- Transportation assistance or project shuttle

- Pre-employment orientation to construction industry expectations and career paths

- Industry-specific work readiness instruction

- Increased access to community child care locations

- Access to mentors, career coaches, and supportive services post-placement

The frequent emphasis on post-placement services including coaching and mentors is critical to ensure all employees have access to resources that help them minimize barriers to productive work once employed. It also ensures that new industry hires in particular have access to networking to support inclusion and retention.

Access to affordable child care is an issue facing residents in all employment sectors across metro Denver. It will be difficult to address in the context of a single infrastructure project, particularly in light of limited metro Denver daycare sites with hours suitable to the construction industry. Yet implementation partners should consider this a supportive services funding priority in order to minimize risks to employee retention and to draw new workers who have decided not to pursue construction jobs due to child care barriers.

Oversight and Evaluation

Community stakeholders and residents expressed strong interest in oversight and evaluation of project goals and metrics. 68% of informant interviewees indicated that a third-party, external to CDOT and the prime contractor, should be involved in program oversight. 80% suggested that public, transparent reporting would increase community engagement with the project. Moreover, it would allow for community members and organizations to participate in solving implementation challenges that may occur. Residents in focus groups also indicated priority interest in seeing quarterly or semi-annual public reports on project progress, or periodic updates to an existing civic or community advisory agency. Sample methods from national targeted

hire projects include establishing a community board, distributing public reports quarterly, and hosting semi-annual public forums for contractors, workers and residents to review successes and challenges.

To evaluate long-term impact of the LLHP, stakeholders from all three data sets, including employers, identified their top success indicators as depicted in **Table 12**. Indicators mentioned a minimum of five times were considered significant. The data suggests that when developing program metrics to define impact, CDOT should consider not only training completions and project placements, but also retention, promotion or advancement, and long-term industry participation.

Key Success Indicators

Indicator	Value
Career Pathway and Advancement	17
Community based evaluation	6
Improve resident quality of life	39
Increase construction workfoce pipeline	19
Job retention	27
Meet or exceed hiring goal	23
More inclusive workforce	11
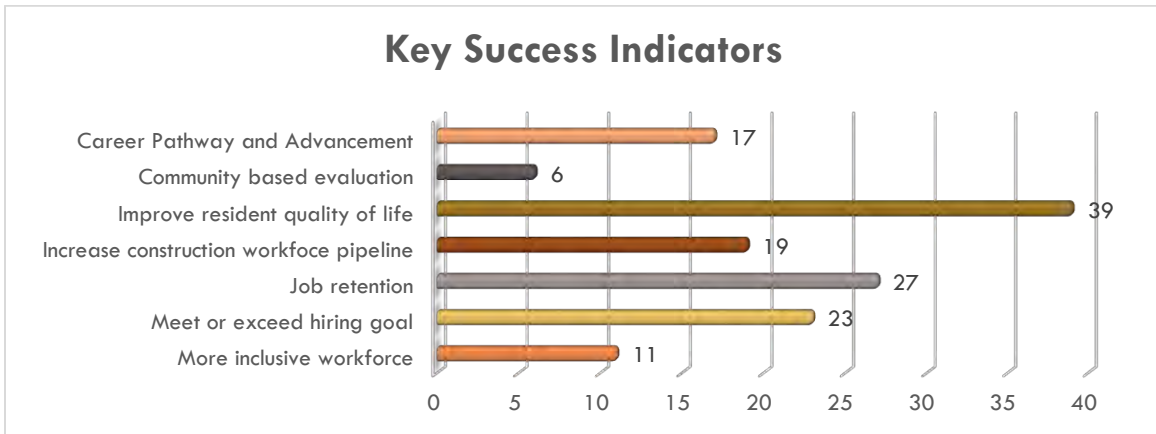
Table 12: Key Success indicators

SECTION 4: GOAL AND PROGRAM RECOMMENDATIONS

Goal Identification

CWI staff assessed multiple factors to define project goals including: (1) Project work hour estimates by scope for Central 70 design and build categories; (2) aforementioned neighborhood demographic reports—in particular indicators related to education and industry experience; (3) resident survey information indicating position interest and skills experience; (4) capacity and depth of existing industry training programs; and (5) review of national infrastructure projects with attached target or local hire initiatives. These recommendations are based on the premise that construction employment and training opportunities associated with local infrastructure projects can be developed to uplift individuals in geographically concentrated poverty, while also providing an expanded pipeline of workers to build the critically needed local construction workforce.

Based on this analysis, CWI recommends that a minimum of 20% of selected project hours be performed by local targeted workers, with priority given to community residents within the expanded geographic area. According to information provided to CWI, the anticipated total project work hours is estimated at 4,895,865. Two NAICS code categories were removed from required minimum consideration, 237110 *Water & Sewer Line and Related Structures Construction*, and 541620 *Environmental Construction*, due to significantly high skill and experience levels required in occupations associated with this sub-sector. This brings total estimated work hours to 3,807,778. A 20% goal indicates a minimum of 761,556 work hours performed by enrolled participants, or 366 FTE (calculated at 2080 work hours per year). This FTE, or Full-Time Equivalent, estimate serves as a guide, rather than a minimum or maximum participant number, since some FTE will work more or less than one year. To maximize participation and support robust goals more in-line with community expectations, CWI recommends that employer incentives are split and applied to both meeting the 20% goal and exceeding it by achieving 25% or 951,944 estimated work hours.

A second goal strategy was considered which would define local hire candidates as metro Denver residents experiencing two or more criteria for target populations federally recognized as disadvantaged—such as chronic homelessness, recipient of federal assistance, unemployed veterans etc. While there was some stakeholder support for income or needs-based criteria in light of regional gentrification concerns, 91% of interviewed stakeholders expressed a preference for geographic criteria. This goal strategy was not recommended given the challenges associated with contractors verifying criteria, the strain a broader candidate pool might place on limited training resources, and the diluted economic impact on neighborhoods directly impacted by construction and mitigation efforts.

For the purposes of this project, a community resident is defined as a local resident whose primary place of residence is within an economically-disadvantaged or environmentally-impacted area, as defined previously. This policy will not only benefit workers living in geographically clustered areas of higher poverty but also provide direct economic opportunity to those impacted from the development and construction of the project. To support simple and effective verification, it is recommended the provision extend to the zip code that encompasses the target neighborhood. These zip codes include 80010, 80011, 80019, 80022, 80205, 80207, 80211, 80216, 80221, 80238, 80239, and 80249. While in some cases the zip codes may include areas that are not environmentally or economically distressed (80207, for example, includes North Park Hill and Park Hill in addition to Northeast Park Hill), it is not anticipated to be a significant issue. The standard best practice in local hire programs across the nation is to use zip-code defined area because zip codes are easily verified through certified payroll records. In light of rapid gentrification in many of the target communities, It is recommended that CDOT work with local community intake hubs to establish a policy to allow previous neighborhood residents within a specific time frame, to also participate in LLHP opportunities.

Both employers and residents indicated a preference for the work hour goal to apply to new hires and existing employees, to insure incumbent workers can benefit from advancement resources and that no existing worker is displaced due to local hire provisions. Eligible existing workers must participate in training activities to expand their skillset. CWI recommends that a sub goal apply to new hires to ensure new workers enter the industry and gain critical skills and experience to expand the heavy highway industry workforce pipeline. An estimated goal of 10% is appropriate, given the pool of unemployed workers in identified neighborhoods. The benefits and challenges of this approach are summarized in **Table 13.**

Goal Definition	Sub-Goal	Goal Rationale	Benefits	Challenges
20% of combined work hours in selected scopes (estimated at a minimum of 761,556) performed by residents of priority zip code areas • Support new and existing workers • Apply to design and build scopes • Apply to project overall and not as a pass through on each individual sub-contract	A minimum of 10% of local hire enrollees overall must be new hires	To provide economic opportunity for neighborhoods impacted by project, the majority of which experience higher than average levels of unemployment and poverty; sub-goal supports growth of workforce by training new workers for heavy highway work	1. Zip Code verification easy to implements	1. Gentrification and continued low-levels of unemployment could restrict candidate pool
			2. Demographics support need for targeted education and employment opportunities	2. Gentrification could result in new residents that are employed and uninterested in opportunities
			3. Very strong stakeholder support for geographic focus	3. Data suggests limited experience in candidate pool

There are numerous peer metropolitan areas with higher local hiring goals than the recommend 20%. Two significant factors supported a lower goal for CDOT's Central 70: (1) Communities such as Los Angeles, Oakland, and Seattle have established municipal local hire policies that support alignment efforts for provisions on a federal project. The Denver metro area has no current or recent municipal LLHP; and (2) Those local policies have driven a robust construction training infrastructure with strong collaboration and well-established industry-driven pre-apprenticeship and skilled craft training options. This infrastructure is less developed in Denver. For example, Seattle supports eight craft pre-apprenticeship programs, including three focused exclusively on supporting women and people of color entering the industry. Metro Denver currently has four programs—Mile High Youth Corp Youth Build, Colorado Construction Institute, the Master's Apprentice and a newly launched program at Emily Griffith Technical College. 70% of interviewed stakeholders cautioned that metro Denver's construction training infrastructure is limited, particularly in heavy highway construction. Moreover, training partners themselves acknowledged that existing strong programs do not currently have the capacity to support a more aggressive goal without significant additional funding.

Over time, these peer cities have expanded existing policies and now regularly achieve LLHP goals of 40% to 50% [16]. CWI believes Central 70 LLHP can fuel expanded capacity in existing organizations, more coordinated new hire resources, and the addition of new programming, particularly in the areas of pre-apprenticeship education. This will in turn build infrastructure to support future local hiring policies and an expanded industry workforce in general.

CWI staff reviewed set and draft policies for three transit infrastructure and five vertical building projects across the western United States.   Among the programs surveyed, the percentage of work hours on any project covered by local hiring requirements ranged from 8 percent to 50 percent of total work hours. 80% of reviewed policies included both craft and professional service scopes. A list of reviewed policies is included as **Attachment J.**

Existing Resources and Identified Gaps

In order to meet and exceed local hiring provisions, the program must cultivate networks and collaborative initiatives to address an array of shared interests and priority needs. From its work implementing and administering RTD's Workforce Initiative Now (WIN) program, and its active participation in the regional public workforce system, CWI is well versed in regional training and resource programs. This base knowledge, combined with stakeholder and resident input has supported the development of the prospective resource list (**Attachment A**). This list details program location, core service provisions, and potential alignment as a training, supportive service or general outreach partner. Organizations are categorized by neighborhood or regional focus.

An assessment of this list presents strong evidence of regional agencies offering general work skills preparation, collaborative non-profit partnerships, the existence of union and non-union registered apprenticeship programs, and potential sources of alignment. There is less widespread evidence of large-scale pre-apprenticeship training, heavy highway skills training, industry specific work skills, and technical skills training offered in evening formats or de-centralized locations.

Through personal knowledge and an assessment of needs identified by employers, residents and informants, CWI has identified service gaps in current resource options as summarized in **Table 14.** Identified gaps reflect data from the three data sets, as well as a comparison of resource agencies in metro Denver with the pool of aligned agencies in peer cities.

Priority Needs	Need represents Priority Concern			Partnership Opportunities / Solutions
	Key Stakeholders	Employers	Residents	
Education & Training				
1. Limited training schedule options for underemployed, or those not able to attend day hours	✓		✓	Require training partners to provide evening and weekend training
2. Lack of pre-apprenticeship infrastructure	✓	✓		Invest in existing programs to expand capacity or start new training efforts aligned with registered apprenticeship programs
3. Very limited heavy highway skills training		✓		Dedicate new training funds to support highway craft core skills
4. Limited awareness of industry expectations and construction career pathways		✓	✓	Establish outreach and training content that emphasizes career pathways and industry-specific work readiness
Jobs & Placement				
1. Need for effective candidate tracking system to efficiently connect employers with applicants	✓	✓	✓	Consider Connecting Colorado or third party system
2. Lack of jobs access for high levels of undocumented individuals residing in target neighborhoods	✓		✓	Consider aligned economic opportunity initiatives such as support for enrolling in DACA certification programs, or support for local catering micro-businesses to feed workers
3. Limited on-the-job training opportunities for career advancement	✓		✓	Expand OJT goal for Central 70 project to support applicant interest in moving beyond entry-level and help contractors to expand workforce
Resources				
1. Limited industry-appropriate care options for parents which childcare needs	✓		✓	Consider partnering with emerging child care cooperatives (GCI and Rocky Mountain Farmers Union) to provide creative approaches to child care
2. Lack of mentors and coaches to support employees post-placement (but limited staff available to	✓	✓	✓	Consider funding industry ambassadors in target neighborhoods or engage

provide service due to workforce shortages)				retired construction workers to connect quarterly with participants
3. Limited personal transportation or long public transit commute times	✓		✓	Fund project shuttle to deliver local workers to site (community foundation partners interested)

<div align="right">Table 14: Priority Needs and Gaps</div>

Program Recommendations

After reviewing collected data and demographic profiles, the critical gaps identified by stakeholders in the previous table, CWI staff and collaborating agency partners have identified priority program recommendations, as identified in **Table 15**. Stakeholder recommendations are divided into themes and importance level. *Low* indicates the theme was voiced two to four times, *Moderate* represents five to nine mentions, and *High* indicates the theme was identified more than ten times. To be correlated into a formal recommendation, a theme had to be significant or mentioned more than once by all three stakeholder groups, and ranked as moderate or higher for at least one of the stakeholder sectors.

LHHP Program Recommendations	Importance Level		
	Key Informants	Employers	Residents
Planning & Structure			
1. Orient community organizations to construction industry expectations	M	H	M
2. Inform and engage local contracting community in defining program structure and setting strategies to achieve goal	M	H	L
3. Engage in industry awareness activity for potential applicants up to 6 months in advance	H	H	M
4. Establish 2 to 3 geographically central intake hubs for enrollment and service referral	H	L	H
5. Identify and align existing organizations to support effort	M	L	L
Outreach & Recruitment			
1. Promote through social media, traditional print and radio	M	H	H
2. Develop customized "app" for information sharing	M	L	H
3. Use established & trusted community "word of mouth" resources	H	L	H
4. Allow for participant and employee "word of mouth" referrals	L	H	M
Education & Training			

1. Integrate technical skills training with industry-specific work readiness expectations	H	M	H
2. Support development of new training, particularly in neighborhoods with restricted access	M	L	H
3. Training should be industry-endorsed, certified or accredited as applicable and result in transferrable skills	H	H	H
4. Encourage hands-on and on-the job training activities	M	L	M
5. Encourage post-placement training	L	H	M
Jobs & Placement			
1. Ensure local hire positions include all levels of industry and represent multiple scopes	H	L	H
2. Measure and incentivize retention, not hiring	M	L	H
3. Expand project OJT opportunities and emphasize these positions as a step up for existing entry-level project employees to showcase ladders of opportunity	H	M	M
Resources			
1. Implement shuttle to deliver workers to site from primary neighborhood transit stops (bus or rail)	H	L	H
2. Connect or fund PPE, appropriate industry apparel and/or tool kits to prepare new workers for industry expectations	M	M	M
Evaluation & Oversight			
1. Involve workers and community members in reviewing progress toward goals and problem solving challenges	M	L	H
3. Distribute public reports quarterly to civic and community leaders	H	L	H
4. Consider third-party evaluation during and post project	H	L	L

Table 15: Program Recommendations

Opportunities for Alignment

Stakeholder informant interviews highlighted multiple geographic or regional initiatives that could align with Central 70 local hire programming to share knowledge or resources, throughout planning and implementation. The opportunities most frequently cited by interviewees are listed in order of frequency and include:

- Office of the National Western Center—City of Denver initiative to assist in the formation of a governance entity for the construction and development of the new year-round National Western Center. The office is responsible for the budget management, maintaining existing partnerships and recruiting additional public and private partners and developing strategic communications and

community outreach efforts; *Potential partner on community outreach, local hire program initiatives, and aligning resources to fund construction workforce pipeline development*

- Mile High United Way United Neighborhoods—a recently launched initiative to concentrate resources into highest-need neighborhoods in Metro Denver to address the needs of residents, create a stronger infrastructure, and build long-lasting, positive community change; *Potential funding and/or evaluation partner*

- Workforce Innovation and Opportunity Act funding—dollars administered by the statewide public workforce system to support skills training, if providers register on the state of Colorado's eligible training provider site, and supportive resources. The workforce regions in Denver, Adams and Arapahoe Douglas counties have all indicated a willingness to leverage resources in support of this program; *Potential funding for short-term and industry-recognized training*

- Workforce Initiative Now (WIN)—an existing community workforce partnership recruiting and training individuals through network partners for careers in transit operations and maintenance, as well as infrastructure construction; WIN provides industry focused supportive services and coaching for individuals enrolled in network partner training programs or employed at local public and private projects; *Potential source of aligned training funding and shared recruitment activities*

- Skilled Worker Outreach, Recruitment and Key Training (WORK Act) funding—Colorado Deptarment of Labor and Employment funding that support recruiting activities to I crease the number of Coloradoans in skilled worker training programs to fill predicted workforce shortages; *Four of the six initial awards went to existing and new training partnerships in construction and these recruitment and outreach efforts can be leveraged to build industry interest*

- Mile High Connects-- partnership of organizations from the private, public and nonprofit sectors that are committed to ensuring that the Metro Denver regional transit system fosters communities that offer all residents the opportunity for a high quality of life; *Potential partner on alternative transportation approaches for all project workers, including local hire employees*

- Denver Opportunity Youth Investment Initiative—an initiative of the Denver Metro Chamber of Commerce to improve educational and employment outcomes for on young adults between the ages of 18 and 24 who are disconnected from school and/or work; *Partner in engaging youth into construction careers*

- Denver Housing Authority's Jobs Plus program—new HUD-funded grant to support workplace and life skill development and employment services for Denver housing Authority (DHA) residents living in Sunnyside; *Potential to fund aligned training for qualified residents and ability to provide extensive supportive services to mitigate employment barriers*

SECTION 5: CONCLUSION AND NEXT STEPS

As identified in Section 3 of this assessment, CWI staff assert there is community support, resident interest and employer benefit derived from establishing LLHP on Central 70. The assessment determined the following key recommendations to meeting and exceeding the established goals:

1. Broaden the specified geography to include additional neighborhoods identified.

2. Apply the LLHP goal project-wide, across all design and build project scopes to ensure a range of employment and training opportunities and true "ladders of opportunity".

3. Apply the goal to new hires and existing workers in need of upskilling opportunities (existing workers eligible *only* if enrolling in an offered upgrade or career development activity or OJT trainee position).

4. While all design and build scopes can participate in achieving the LLHP goal, targeted position opportunities that may represent broader candidate pools and transferrable career pathways post project include—laborers, equipment operators, commercial drivers, OJT trainees or Apprentices learning skilled crafts, administrative assistants, and accounting clerks.

5. Expand the existing OJT goal of 115,000 work hours to support demand for career pathways and to provide a robust framework for new hires to expand skills and advance.

6. Establish a sole workforce convener, such as Denver Office of Economic Development—Workforce Development or similar organization with regional impact that would coordinate community intake hubs, standardize assessment and referrals, and track training and placement outcomes.

7. Align multiple training programs to create a pipeline system capable of preparing a wide range of students, job seekers and workers, and ensure existing or new training is included on the Colorado's Eligible Training Provider List (ETPL).

8. Seek direct or aligned funding through the philanthropic community to address identified training and resource gaps including wrap around supportive services and mentoring, foundational skills, enhanced transit access, and paid training assistance (i.e. stipends for participants in long-term training programs).

9. Continue partnering with experienced construction workforce partners, including trade associations, the Colorado Building Trades, and the Center for Workforce Initiatives to inform and educate community organizations, local residents, and training partners on industry practices and expectations.

10. Coordinate with upcoming key projects, such as the National Western Center (central Denver) or the GreyHound Racetrack Redevelopment (Commerce City), in order to leverage resources and potentially share workforce across projects.

11. Commit to public and transparent reporting on the LLHP program with periodic collaborative forums that engage all stakeholders in identifying and resolving potential issues.

The identification of a clear and concise implementation plan to address these key recommendations, as well as the broader program recommendations highlighted in Section 4 will be an important next step. Stakeholder data suggests strong interest in the project. To capitalize on this momentum, CWI recommends prompt action to convene two-to-three follow-up stakeholder focus groups to define implementation and intake procedures, in order to continue engagement and facilitate partnerships.

Additionally, while Central 70 project schedules would not actively recruit workers for at least twelve months, the skills and experience of the assessed population suggests that advanced training and industry outreach will lead to a more qualified candidate pool. A series of outreach events or information fairs should begin as soon as Fall 2016 to help local residents understand the training activities aligned to the project, industry expectations and career ladders, and how positions will be advertised and recruited once Central 70 breaks ground.

Additional preparatory work can be done with project employers, as they are selected, to 1) predict competencies and credentials needed to qualify employees for targeted position opportunities, and 2) ensure existing or new education and training programs implement curriculum that meets the competencies and credentials sought. These identified activities can be performed efficiently through the existing contract with CWI and Denver's OED will set the foundation for a successful Central 70 LLHP program.

SECTION 6: ACKNOWLEDGEMENTS

CCD's Center for Workforce Initiatives wishes to thank the community-based programs who supported the data collection components of this assessment, including the following partners:

- Denver Office of Economic Development—Workforce Development-- OED serves as an employment and training resource for employers, job seekers, veterans, and youth throughout the metro area, operating three workforce centers and administering integrated public workforce funding services.

- Colorado Construction Institute--a non-profit that provides pre-apprentice programs to help to bridge the middle-skills gap including the YouthBuild program focused on serving high school dropouts, and industry-supported construction training classes for unemployed and underemployed adults

- Community College of Aurora—CCD's partner college that serves east and northeast Denver and Aurora. CC of Aurora serves over 11,000 students annually in a diverse environment.

- Focus Points Family Resource Center--a non-profit serving low-income families in northeast Denver. It has served as a community center for more than 20 years, providing basic adult education, school readiness programs, healthy living initiatives, and community leadership to local residents living in Globeville, Elyria and Swansea

- Mi Casa Resource Center-- a non-profit that works to advance the economic success of Denver's Latino and working families through youth programs that foster academic success, leadership, and career exploration and for adults through career and business training.

- Urban League of Metro Denver—a non-profit that works to create a more level playing field for African Americans and others of all ethnic backgrounds who reside in the greater Denver area. ULMD partners with public private and non-profit entities to support workforce development in targeted communities, including Green Valley Ranch, Montbello, the Far Northeast, and Gateway. ULMD's ground level connections provide greater connectivity with potential recruits and community members who serve as program advocates or ambassadors.

Additional organizations contributing to data collection planning included Colorado Contractors Association, Denver Housing Authority, Emily Griffith Technical College, and Place Matters.

CWI staff also wish to thank the following individuals for valuable assistance in data collection and analysis:

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- Shaleec Thomas; Data Entry Intern; Community College of Denver

Limitations of Data

At the time of this study, the most recent data available is from the 2014 American Community Survey. Denver's population and labor market have been changing rapidly in the last two years, and it is likely that more recent shifts in demographics, income and employment are not reflected in the data sets used in this study. Since Denver has changed so rapidly in the past several years, policymakers should "ground truth" these maps, comparing the typology to local knowledge and other research. Further research and drilldown analysis for areas of concern is recommended.

Additionally, given the eight-week time period in which this study was performed, data collection efforts, particularly regarding the resident survey, are not intended to serve as a statistically significant sample size.

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APPENDIX

Attachment A	Neighborhood and Regional Resource Providers
Attachment B	Supplemental Data Collection Sources
Attachment C	Interviewed Informants List
Attachment D	Demographic Breakdown of Focus Group & Survey Participants
Attachment E	Map of Local Hire Recommended Neighborhoods
Attachment F	Comparable Data Indicators - EJS Corridor Neighborhoods
Attachment G	Comparable Data Indicators - Proposed Additional Neighborhoods
Attachment H	Related Industry Employment Level by Zip Code
Attachment I	Heavy Highway Career Competency Model
Attachment J	Reviewed Local Hire Policies

NEIGHBORHOOD AND REGIONAL WORKFORCE RESOURCES FOR CENTRAL 70 OUTREACH AND TRAINING

Agency	Address	Description of Services	Technical Training	Basic Adult Education	General Workforce Readiness	General Outreach
AURORA						
Arapahoe Douglas Works!	6974 S Lima St, Centennial, CO 80112	Comprehensive employment services for youth and adults, business development, education; Fund technical training			x	x
Aurora Public Schools--P20 Career and College Pathways	15701 E. 1st Ave. Aurora, CO 80011	Middle school and high school programming in targeted industries, including STEM careers	x		x	x
Asian Pacific Development Center	1537 Alton St, Aurora, CO 80010	Health care services, adult education and youth services. Focused on the Asian American populations.		x		x
Aurora Welcome Center	1085 Peoria St, Aurora, CO 80011	English as second language classes, immigrant and refugee integration. General services.		x		x
Community College of Aurora	710 Alton Way, Denver, CO 80230	General adult education including technical skills training, certificates and degrees; relevant programs include diesel mechanic and office or accounting	x		x	x
Fields Foundation	1445 Dayton St, Aurora, CO 80010	General youth services. Healthcare, education, workforce training			x	x
Pickens Technical College	500 Airport Blvd. Aurora, Co 80011	Provides post/secondary career training. Over 50 certificates including CAD, HVAC, welding and auto mechanics	x		x	x
Step Up, Inc.	15290 E 6th Ave. #290 Aurora, CO 80011	Faith-based, life skills and recovery support agency			x	x
COLE						
Denver Urban Scholars	3532 Franklin St, Denver, CO 80205	Youth education services, case management, financial assistance, mentoring			x	x

Name	Address	Services				
YouthBiz	3280 Downing St, Denver, CO 80205	General youth services, education services, helps participants start and run their own business	x		x	
CLAYTON						
Bruce Randolph School	3955 Steele St, Denver, CO 80205	General youth education				x
Eastside Workforce Center	3815 Steele St. Denver, CO 80205	General workforce services and employment preparation			x	x
Harrington Elementary	2401 E 37th Ave, Denver, CO 80205	General youth education				
COMMERCE CITY						
Adams County Housing Authority	7190 Colorado Blvd. Commerce City CO 80022	General employment and GED prep classes; housing and foreclosure assistance counseling		x	x	x
Adams County Workforce	4430 S Adams County Pkwy, Brighton, CO 80601	General employment services and funding for training			x	x
Community Development Food Distribution Center	7111 E. 56th Ave. Commerce City, CO 80022	Supportive service referrals; food & housing assistant				x
Community Enterprise	7290 Magnolia St, Commerce City, CO 80022	Community advocacy and general workshops to support families				x
FIVE POINTS (including Curtis Park)						
Centro San Juan Diego	2830 Lawrence St, Denver, CO	General adult education training, resources, and legal assistance		x		x
El Centro Humantario	2260 California St, Denver, CO 80205	General employment services, job readiness, Women's self sufficiency program			x	x
Five Points Business District	2444 Washington St # 100, Denver, CO 80205	Business development				x
Groundwork Denver	3050 Champa St, Denver, CO 80205	Employment services specializing in urban farming				x
Urban League of Metro Denver	700 E 24th Ave #8, Denver, CO 80205	Employment services for people of color			x	x
Women's Bean Project	3201 Curtis Street, Denver, CO 80205	Employment services and job readiness services for women			x	x
GATEWAY/GREEN VALLEY						
Families Forward Resource Center	4800 Telluride St. Building 5 Denver, CO 80249 (also locations in Aurora and Montbello	Support family efficacy and advocacy through a variety of programs and leadership development resources				x
MLK Early College	19535 East 46th Avenue, Denver, CO 80249	General youth high school level education and college prep				x

P.U.S.H Academy	4501 Airport Way, Denver, CO 80239	General youth high school level education				x
GLOBEVILLE						
Garden Place Elementary	4425 Lincoln St, Denver, CO 80216	General youth education				x
Community College of Denver Advanced Manufacturing Center	2570 31st St. Denver, CO 80216	Technical training in welding, machining, and adv. Manufacturing	x		x	x
ELYRIA/SWANSEA						
Learning for Life / Swansea Elementary	4650 Columbine St, Denver, CO 80216	General youth education				x
Focus Points	2501 East 48th Ave., Denver, CO 80216	General family assistance services, English as second language classes		x	x	x
Colorado Construction Institute	4800 Race St, Denver, CO 80216	Construction related education and job placement services	x	x	x	x
GES Right to Livewell	2501 East 48th Ave., Denver, CO 80216	Promotes wellness in Elyria-Swansea, Globeville. Focus on healthy eating and active living in the GES neighborhoods; Entrepreneurial training				x
MONTBELLO						
Boys & Girls Club - Darrent Williams Branch	4397 Crown Boulevard, Denver, CO 80239	General youth outreach, after school programs, youth recreational programs				x
CLLARO	4755 Paris St #300, Denver, CO 80223	Employment services, job readiness and advocacy for the Latino population			x	x
Denver Center for International Studies	5000 Crown Blvd, Denver, CO 80239	Youth education grades 6-12 with emphasis and multi-lingual and inter-cultural competencies, college prep				x
Denver Workforce Services; Montbello	4685 Peoria St., Suite 251 Denver, CO 80239	General employment services, job readiness, education and training			x	x
Families Forward Resource Center	4725 Paris St. Suite 300 Denver, CO 80239	General family assistance and education services			x	x
Far Northeast Neighbor's, INC	13295 Andrews Dr. Denver, Co 80239	Neighborhood support services/resources				x
High Tech Early College	11200 E 45th Ave, Denver, CO 80239	Business, Information Technology and Design fields	x			x

KIPP Academy	5290 Kittredge St, Denver, CO 80239	General youth education services grades 5-8, college prep				x
Love Christian Academy	4651 Tulsa Ct, Denver, CO 80239	Faith based community outreach services, general youth and adult education, beauty school opportunities	x		x	x
Montbello Organization Committee	N/A	Ground level engagement of Montbello residents around issues impacting the community, including transportation and issues interrelated with public transportation				x
Noel Community Arts School	5000 Crown Blvd, Denver, CO 80239	General youth education services with emphasis in the arts, college prep				x
STRIVE PREP	5000 Crown Blvd, Denver, CO 80239	Youth education services				x
NORTHEAST PARKHILL						
Boys and Girls Club--Vickers Location	3333 Holly St, Denver, CO 80207	General youth services, education and recreational activities				x
Colorado Carpenters Joint Apprenticeship and Training Committee	4290 Holly Street, Denver, CO 80216	Carpentry apprenticeship and upgrade training	x			x
Smith Renaissance School / Smith Elementary	3590 Jasmine St, Denver, CO 80207	General youth education				x
Denver Works	5725 E 39th Ave, Denver, CO 80207	Employment services, job readiness, clothing resource, education and training		x	x	x
Mi Casa Resource Center Innovation Lab	3399 Holly Street, Suite 134 Denver, CO 80207 (main location 360 Acoma St, Denver, CO 80223)	Comprehensive family assistance services, business development, youth and adult education programs	x	x	x	x
Northeast Women's Center	4821 E 38th Ave	General resource services for women and families in NE Denver				x
Venture Prep	2540 Holly St, Denver, CO 80207	General youth education, college prep for grades 9-12				x
STAPLETON						

Northeast Denver Housing Center	1735 Gaylord St, Denver, CO 80206	Housing development, education, counseling and home buyer workshops	x		x	x
Northeast Transportation Connections	8230 Northfield Blvd. #1350 Denver, CO 80238	Transportation services, car pooling/ride sharing				x
Stapleton Foundation	7350 E. 29th Ave. Suite 204 Denver, CO 80238	General services including but not limited to education, health/wellness, business development			x	x
Stapleton United Neighbors Association	7351 E 29th Ave, Denver, CO 80238	Resource library, Community information				x
SUNNYSIDE (including Chaffee Park)						
Bridge Project	4558 Navajo Street Denver, CO 80211 (other locations in Lincoln Park, Columbine and Westwood)	Engage children and youth living in housing projects in educational opportunities to facilitate development of life skills and self-sufficiency		x		x
Catholic Charities of Denver (includes Samiritan House)	4045 Pecos St, Denver, CO 80211 (also downtown location)	Comprehensive general services provider including but not limited to job search, education, childcare, shelter, food assistance, women services			x	x
SUNI (Sunnyside United Neighbors Inc.)	PO Box 11381	General community services and connections				x
Urban Peak	4890 Pecos St Denver, CO 80211 (also downtown location with shelter and resource programming)	General youth and at risk youth services, GED, job readiness; thrift store		x	x	x
WHITTIER						
Beau Matthews Center for Excellence	3030 Downing Street Denver, CO	Workplace training, and housing assistance. Training offered on demand	x		x	x
Project VOYCE	2900 Downing St # A, Denver, CO 80205	Youth and minority advocacy, education services			x	x
Whittier Neighborhood Association	2900 Downing Street, Suite 1B Denver, CO 80205	General community services and connections				x
REGIONAL						

Organization	Address	Services				
Associated General Contractors	1114 W 7th Ave #200, Denver, CO 80204	Workforce development, specialized training for construction related fields; Construction Careers Now partnership	x		x	x
Bayaud Enterprises	333 W Bayaud Ave, Denver, CO 80223	Employment services, job readiness, education and training			x	x
Break Careers Pathway Collaborative / Empowerment program	1600 York St # 101, Denver, CO 80206	General work readiness and employment services--including a focus on ex-offenders; *applicable programming includes funding for construction training*	x		x	x
Black Construction Group	924 W. Colfax Ave. Suite 104-G Denver, CO 80204	Provides economic opportunity and support to Black owned businesses, education and training services			x	x
Center for Work Education and Employment	1175 Osage Street, Suite 300 Denver, CO 80204	General work readiness training, basic office skills and professional clothing closet	x		x	x
Colorado Contractors Association	6880 S. Yosemite Ct. Centennial CO 80112	Providing professionals across the state with infrastructure advocacy, education and partnerships; provides technical skills upgrades and core skills training for heavy highway work; Construction Careers Now partnership	x			x
Community College of Denver	1111 W Colfax Ave, Denver, CO 80204	General adult education including ABE, technical skills training, certificates and degrees; relevant programs include welding, office and accounting, pre-engineering and drafting	x		x	x
Community Reentry Project (City and County of Denver)	655 Broadway, Suite 450 Denver, CO 80203	Comprehensive general services including but not limited to education, childcare, shelter, food assistance for recently released former inmates			x	x

Name	Address	Description				
Construction Industry Training Council	646 Mariposa St. Denver, CO 80204	Provides construction education and training for non-union contractors. Trades include electrician, plumbing/pipefitting, carpentry and sheetmetal	x		x	x
Contractor Academy	1114 W. 7th Ave Denver, CO 80204	Partnership between Hispanic Contractors and Black Construction Group to provide mentors and classroom training to small businesses	x			x
Deconstruct	1414 Blue Spruce Dr., Unit B Fort Collins, Co 80524	Training program offered through National Center for Craftsmanship. The program partners with schools, non-profits & workforce centers to deconstruct buildings donated by home owners or developers	x		x	x
Denver Office of Economic Development	201 W Colfax Ave #907, Denver, CO 80202	Comprehensive employment services, business development, education			x	x
Denver Housing Authority	777 Grant St, Denver, CO 80204 (locations in Sunnyside and across Denver)	Employment services, job readiness, education, training, housing assistance	x		x	x
Denver Indian Center	4407 Morrison Road Denver, CO 80219	Family support services, fatherhood education, food assistance, job readiness for Native American communities			x	x
Denver Joint Electrical Apprenticeship Training	5610 Logan St. Denver, CO	Apprenticeship training and education program for electrical industries	x		x	x
Denver Public Library	See locations below:	Library Cards, online high school, books, community resources, computers and tech, reading programs	x			x
Blair Caldwell African American Research Library	2401 Welton St., Denver CO 80205		x			x
Ford Warren Branch Library	2825 Hight St., Denver CO 80205		x			x
Park Hill Branch Library	4705 Montview Blvd., Denver CO 80207		x			x
Pauline Robinson Branch Library	5575 E. 33rd Ave., Denver CO 80207		x			x

Woodbury Branch Library	3265 Federal Blvd., Denver CO 80211		x			x
Valdez-Perry Branch	4690 Vine St., Denver CO 80216		x			x
Sam Gary Branch Library	2961 Roslyn St., Denver CO 80238		x			x
Montbello Branch Library	12955 Albrook Dr., Denver CO 80239		x			x
Green Valley Ranch Library	4865 N. Andes Ct., Denver CO 80249		x			x
Denver Public Schools Career Connect	1860 Lincoln St, Denver, CO 80203 (locations @ Montbello High School and Bruce Randolph High School)	Industry partnerships to support secondary education career learning opportunities			x	x
Denver's Road Home-Employment Sub-Committee	4685 Peoria St. Denver, CO (Denver's Road Home	Short and long term assistance, including services to prevent homelessness, employment, substance treatment, mental health and permanent housing			x	x
Dress for Success	1510 N. High St. Denver, CO 80218	General work readiness, leadership training and professional clothing closet			x	x
Emily Griffith Technical College	1860 Lincoln St, Denver, CO 80203	General education for youth and adults, technical education certificates, ABE; relevant programs include welding, drafting, office skills and pre-apprenticeship	x		x	x
FRESC	7760 W 38th Ave #200, Wheat Ridge, CO 80033	Worker advocacy especially low income people and people of color, employment services, education, affordable housing			x	x
Front Range Community College	3645 W 112th Ave Westminster, CO 80031 (also campuses in Larimer and Brighton)	General education and certificate/degree programs for youth and adults, relevant programs include welding and drafting	x	x	x	x
Gary Community Investments	1705 17th St #200, Denver, CO 80202	Invests in a multitude of businesses that promote education and economic stability for low income families				x

Gathering Place	1535 High Street Denver, CO 80218	Basic and emergency needs services for women and transgendered individuals; job readiness and education			x	x
Goodwill	6850 Federal Boulevard Denver, CO 80221 (metro-wide including Stapleton location)	Employment services, financial coaching, education programs, entrepreneurial support, clothing resource, child care			x	x
Greater Metro Denver Ministerial Alliance	PO Box 202854 Denver, CO 80220	African-american and low income advocacy				x
Hispanic Contractors of Colorado	646 Mariposa St # 100, Denver, CO 80204	Business development, education for business owners, bid opportunities	x		x	x
Independent Electrical Contractors—Rocky Mountain Chapter	480 East 76th Avenue Building 5, Denver, Colorado 80229.	Apprenticeship training and education program for electrical industries	x		x	x
Ironworkers LU 24 Joint Apprenticeship Training Committee	501 W 4th Ave Denver, CO 80223	Four-year apprenticeship training and journeyman upgrade training				
Laborers Joint Apprenticeship Training Center	10505 Havana St, Brighton, CO 80601	Two-year apprenticeship training and journeymen upgrade training courses for commercial and highway construction laborers.	x		x	x
mPowered Denver	2009 Wadsworth Blvd #100, Lakewood, CO 80214 (locations metro-wide including @ Montbello Workforce Center	Financial coaching, bankruptcy counseling, financial education			x	x
Master's Apprentice	646 Mariposa Street #201, Denver, CO 80204	Employment services, apprentice programs for young men	x		x	x
Mile High Connects		Broad partnership of many organizations that advocate for access to affordable public transit and affordable housing				x
Mile High United Way	711 Park Ave W, Denver, CO 80205	Comprehensive general services provider including but not limited to education, childcare, shelter, food assistance, women services			x	x
Mile High Youth Corp	1801 Federal Blvd, Denver, CO 80204	Employment services targeted at young adults aged 16-24 with special focus on environmental conservation	x		x	x

Organization	Location/Contact	Description				
Mountain States Lineworkers Joint Apprenticeship Training Center	Don Hendrickson; 801-562-2929	Three- year apprentice training program for outside electrical construction.	x		x	x
Operating Engineers Joint Apprenticeship Training Center	990 Kalamath Street (office location—training off-site)	Three- year apprentice training program for machine operators	x		x	x
Regional District Council Training Trust—Ironworkers Local Union #846 and #847	Aurora, CO 80011	The Locals and their signatory contractors sponsor a three-year apprenticeship training program to teach safety, reinforcing ironwork, rigging and welding program registered with OAT			x	x
Rocky Mountain Micro Finance Institute	711 Park Avenue West Denver, CO 80205	General education and coaching to support small business development	x			x
Servicios de la Raza	3131 W. 14th Ave Denver, CO 80204	General work readiness and targeted health and community access programs for adults and youth			x	x
Spring Institute	1373 Grant St. Denver, CO 80203	English as second language classes, immigrant and refugee integration, general ABE		x	x	x
St. Francis Center	2323 Curtis St. Denver, CO 80205	Pre-employment, housing and supportive services for metro Denver individuals facing homelessness; direct and referral services			x	x
Together Colorado	1980 Dahlia St, Denver, CO 80220 (operates within multiple neighborhoods including Globeville, Elyria / Swansea)	Community organizing partnership that serves all of Colorado, Immigration advocacy			x	x
Turnabout Inc.	1630 East 14th Avenue; Denver, CO 80218	Workforce supportive services and coaching for ex-offenders (also referrals to technical training)			x	x
Veterans Administration Community Workforce Training-	4945 Hale Parkway Suite 380 Denver, CO	Job coaching, workplace readiness and supportive services to local veterans			x	x

ATTACHMENT B: Supplemental Data Collection Sources

In addition to original data collection, demographic profiles, national local hire policies, and cited resources, CWI staff reviewed the following reports related to local and regional economic growth and the growth of a competitive, skilled workforce

[1] Associated General Contractors 2015 Workforce Survey Colorado Results. Downloaded: 11/21/2015 at 4:33 PM
https://www.agc.org/sites/default/files/Files/Communications/2015_Workforce_Survey_Colorado.pdf

[2] Associated General Contractors 2016 Workforce Survey Colorado Results. Downloaded: 9/1/16 at 4:21 PM
https://www.agc.org/sites/default/files/Files/Communications/2016_Workforce_Survey_Colorado.pdf

[3] Aurora Economic Development Council (2016 Strategic Plan)   Available on-line at
http://www.auroraedc.com/Aurora/media/Aurora/About%20Us/Aurora-EDC-2016-Strategic-Plan.pdf?ext=.pdf

[4] Colorado Workforce Development Council; Colorado Central Planning Region's Regional Plan for Execution of Workforce Development Activities. March, 2016. Available on-line:
https://www.colorado.gov/pacific/sites/default/files/Central%20Planning%20Region%20plan%20for%20Execution%20of%20Workforce%20Development%20Activities.pdf

[5] Commerce City Economic Priorities; Available on-line at
http://www.c3gov.com/index.aspx?nid=867

[6] Denver Office of Economic Development JumpStart 2016 (Strategic Plan)
Available online:
https://www.denvergov.org/content/dam/denvergov/Portals/690/Reports%20and%20Studies/JumpStart2016-web.pdf

[7] Denver Office of Economic Development. *Gentrification Study: Mitigating Involuntary Displacement.* May 2016. Available online:
https://www.denvergov.org/content/dam/denvergov/Portals/690/Reports%20and%20Studies/GENT%20STUDY%20051816.pdf

[8] Industry Employment Projects, Colorado Department of Labor, Labor Market Information. Downloaded: 5/19/2016 at 10:32 AM at www.colmigateway.com/vosnet

[9] Thevenin, Melissa and Jonathan Elliott. *Economic Impacts of the Construction Industry on the State of Colorado*. January 2015. Available online:
http://www.buildingjobs4colorado.com/jobs4co/2015_EconomicImpactStudy_Final.pdf

	Attachment C Interviewed Stakeholders List	
	Organization	**Contact person**
1	Adams County Workforce Services	Joel Parriot
2	AD Works!	Joe Barela & Dawn Gardner
3	Associated General Contractors	Brian Cook
4	Aurora Economic Development Council	Yuriy Gorlov
5	Aurora Welcome Center	Diana Higuera
6	Bayaud Enterprises	Scott Kerr
7	BCPC Collaborative / Empowerment program	Mickie Lewis
8	Boys and Girls Club	Jason Torrez; John Barry
9	Bruce Randolph School	Harold Sanchez
10	Catholic Charities of Denver (includes Samiritan House)	Tom Horton
11	Center for Work Education and Employment	Karen Stran
12	CLARRO	Christine Alonzo
13	Colorado Construction Institute	Michael Smith
14	Colorado Construction Careers	Tammy Malone
15	Commerce City Economic Development	Michelle Claymore
16	Community College of Aurora	Janel Highfil, Victor Vialpando
17	Community College of Denver	Chris Budden, Rhonda Epper
18	Community Enterprise	Erin Mooney
19	Denver Councilman Albus Brooks, Dist 9	
20	Denver Councilwoman Gillmore, Dist 11	
21	Denver Councilwoman Kniech, at-large	
22	Denver Councilwoman Ortega, at-large	
23	Denver Area Labor Federation (DALF)	Josh Downey & Madison Cassels
24	Denver Housing Authority	Lynne Picard & Damon McIntyre
25	Denver Housing Authority--Quigg Newton	Shania Olson
26	Denver Minister's Alliance	Pastor Del Phillips
27	Denver Office of Economic Development--Neighborhood Services	Seneca Holmes & Sylvia Smith
28	Denver Office of Economic Development--Workforce Development	Denise Bryant & Anita Davis
29	Denver Public Schools (Career Connect)	Lauren Trent; Joe Saboe
30	Denver Urban Scholars	Barbara Decker
31	Denver Works	Michelle Bueno
32	Denver Workforce Center; Montbello	Dana Williams
33	Emily Griffith Technical College	Jeff Barratt
34	Families Forward Resource Center	Dave Bechhoefer
35	Fields Foundation	Maisha Pollard
36	Focus Points	Steven Moss
37	FRESC	Stephen Moore & Felicia Griffin
38	Gary Community Investments / Piton Foundation	Tracy Stewart

39	GES Right to Live Well	Nola Miguel
40	Goodwill Industries	James Sanchez
41	Groundwork Denver	Shane Wright
42	Learning for Life / Swansea Elementary	Kenia Abeyta
43	Master's Apprentice	Scott Flores
44	mPowered Denver	Brian Palmieri
45	Mi Casa Resource Center	Andrea Stiles Pullas, Demetria Dean
46	Mile High Connects	Dace West
47	Mile High United Way	Steve King & Tim Main
48	Mile High Youth Corp	Kelley Causey, Amber Palmeri, Brigid McRaith
49	Montbello Organization Committee	Mayra A Gonzáles
50	NDCC	Barbara Frommer
51	Next Steps	Ed Romero & Ron Montoya
52	Northeast Denver Housing Center	Chris Dukes
53	Northeast Transportation Connections	Angie Rivera-Malpiede
54	Project Voyce	Candi CdeBaca
55	ResCare (Denver Workforce Services)	Perla Ghanier
56	Salvation Army	Matt Rohrich
57	Spring Institute for Intercultural Learning	Jessie Hawthorn
58	Urban Land Conservancy	Tony Pickett
59	Urban League of Metro Denver	Voletha Bradley & Sheritha Semakula
60	Urban Peak (New Thrift Store site)	Kathryn Westphal
61	Women's Bean Project	Tamra Ryan
62	YouthBiz	Anna Lear
	Employer Organizations and Focus Groups	**Contact person**
1	Associated General Contractors--subgroup of employer members	Bryan Cook
2	Colorado Black Construction Group--subgroup of employer members	Joecelyn Robinson
3	Colorado Building and Construction Trades Council	Gayle Noon
4	Colorado Building Trades Joint Apprenticeship Training Council	Doug Gleaton
5	Colorado Asphalt Paving Association	Tom Clayton
6	Colorado Contractors Association	Terry Kish
7	Hispanic Contractors of Colorado--Contractor Academy	Helga Grunerud
	Focus Group Dates & Location	**Contact person**
1	Colorado Construction Institute	Michael Smith
2	Colorado Construction Institute	Michael Smith
3	Community College of Aurora	Janel Highfill
4	Community College of Aurora	Janel Highfill
5	Community College of Aurora	Janel Highfill
6	Focus Points Resource Center	Steven Moss

7	Focus Points Resource Center	Steven Moss
8	Focus Points Resource Center / GES Right to Livewell	Nola Miguel
9	Mi Casa Resource Center	Demetria Dean
10	Mi Casa Resource Center	Demetria Dean
11	Urban League of Metropolitan Denver	Sheritha Semakula
12	Urban League of Metropolitan Denver/ CLARRO	Sheritha Semakula
13	Urban League of Metropolitan Denver	Sheritha Semakula
14	Community College of Denver	Shaleec Thomas
15	Community College of Denver	Shaleec Thomas

FOCUS GROUP PARTICIPANT DEMOGRAPHICS (147)
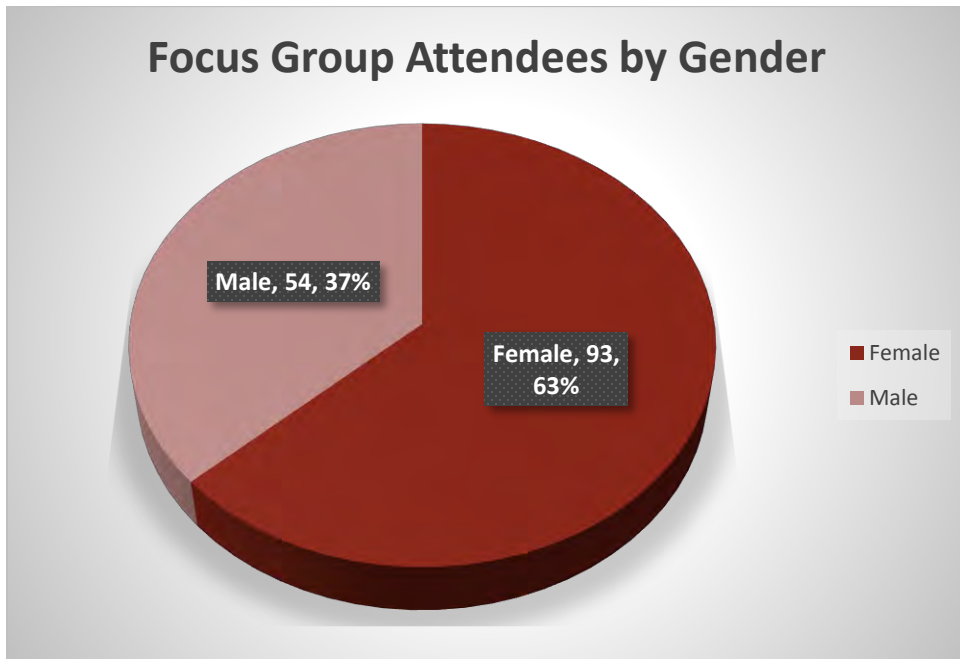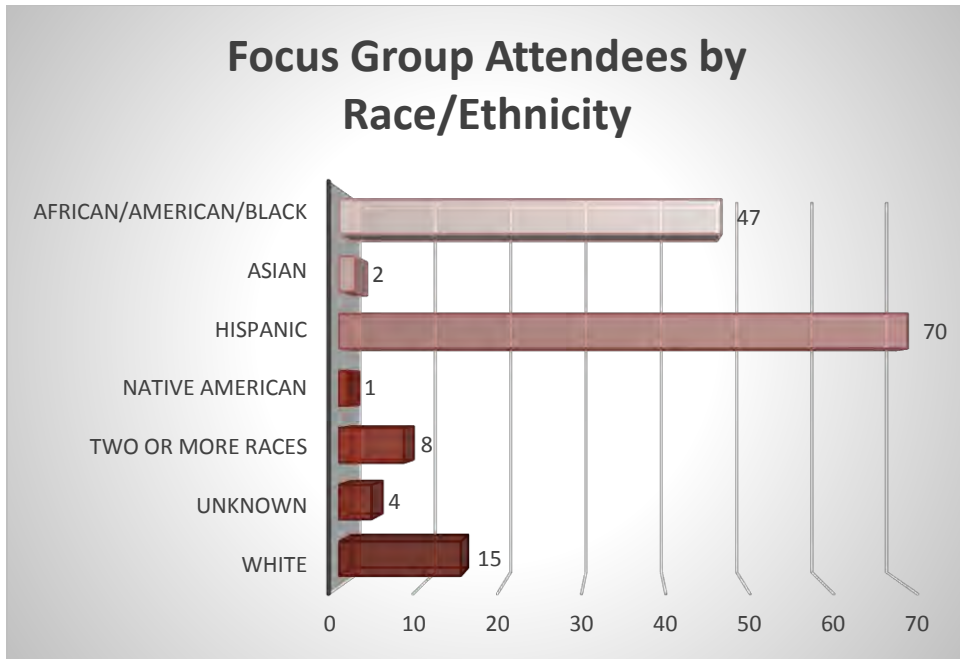
Primary Zip Codes	Totals
80010	10
80011	9
80019	0
80022	0
80205	3
80207	24
80211	0
80216	18
80238	1
80239	30
80249	10
Other Zip Code	
80003	2
80005	1
80012	8
80013	2
80014	1
80015	1
80017	3
80021	1
80128	1
80138	1
80204	1
80206	1
80219	1
80220	6
80222	1
80227	1
80229	3
80231	1
80247	3
80501	1
80603	1
80640	1

Survey Respondents: Are you Hispanic or Latino?

- 3, 0%
- 189, 36%
- 336, 64%

Legend:
- No
- Yes
- Did not disclose

Survey Respondents by Race

Race	Count
AFRICAN AMERICAN	146
ASIAN/PACIFIC ISLANDER	10
DO NOT WISH TO ANSWER	108
NATIVE AMERICAN	28
NON-LATINO WHITE	143
OTHER RACE (SINGLE RACE)	17
TWO OR MORE RACES	40
WHITE	53
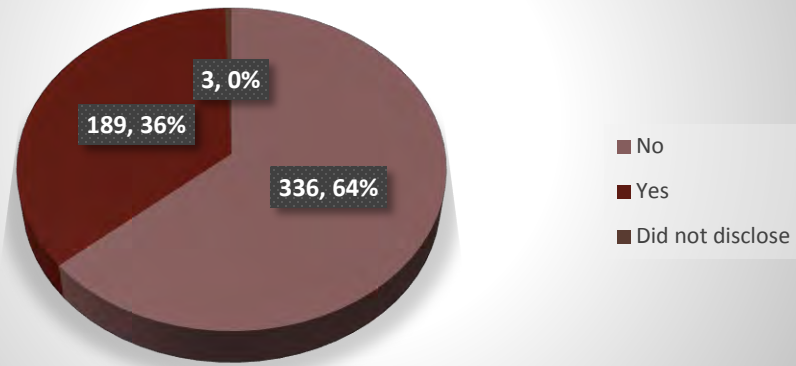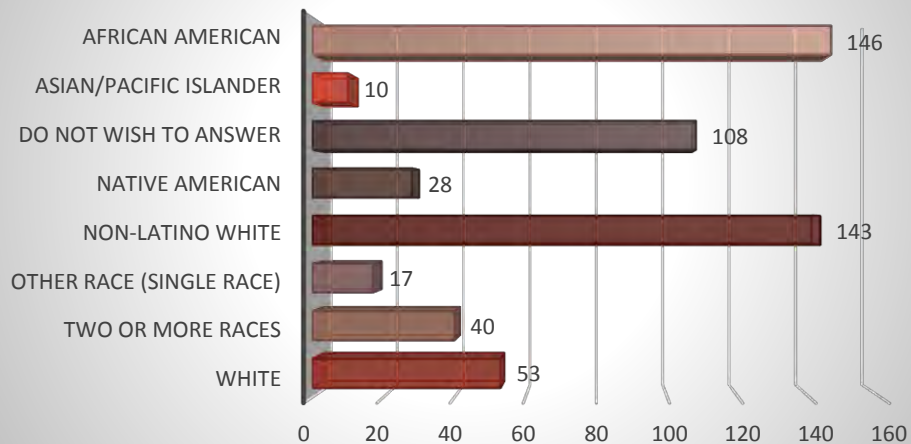
Survey Respondents by Gender

Not disclosed, 106, 20%
Female, 223, 42%
Male, 199, 38%

- Female
- Male
- Not disclosed
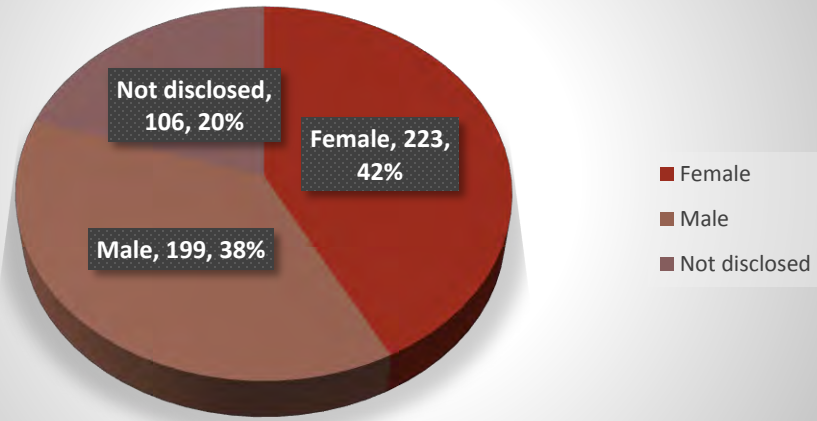
Survey Respondents by Zip Codes	
Primary Zip Codes	**Totals**
80010	17
80011	16
80019	0
80207	16
80216	68
80221	6
80239	38
80249	15
Secondary Zip Codes	
80022	7
80205	134
80211	25
80238	4

All Other Zip Codes							
80002	2	**80110**	1	**80214**	4	**80233**	3
80003	1	**80112**	1	**80218**	2	**80234**	1
80004	1	**80113**	1	**80219**	10	**80237**	2
80005	2	**80120**	3	**80220**	16	**80241**	2
80012	5	**80123**	1	**80222**	3	**80247**	4
80013	8	**80127**	2	**80223**	3	**80260**	3
80014	5	**80134**	1	**80224**	1	**80465**	1
80015	1	**80202**	2	**80226**	3	**80504**	1
80017	2	**80203**	9	**80227**	3	**80601**	1
80020	1	**80204**	26	**80228**	2	**80621**	2
80027	1	**80206**	4	**80229**	3	**80640**	1
80031	2	**80209**	2	**80230**	1	**80902**	1
80033	6	**80210**	2	**80231**	5		
80047	1	**80212**	8	**80232**	3		

Attachment E Map of Local Hire Recommended Zip Codes

Indicators	Denver County	Elyria-Swansea	Globeville	Gateway/ Green Valley Ranch	Montbello	Northeast Park Hill	Stapleton	Chambers Heights and Laredo Highline	Delmar Parkway, Jewell Heights and Hoffman Heights	Montview Park	North Aurora
18 years and older	500,269	4,220	2,653	22,686	20,990	6,245	11,729	3,453	16,259	14,535	13,836
Average Household Income	$77,657.55	$43,028.81	$40,428.12	$75,989.21	N/A	$49,004.47	$136,079	$47,730.03	$45,283.13	$41,242.88	$54,438.50
Families in Poverty	13.72%	33.65%	30.91%	5.88%	25.19%	25.23%	3.33%	27.56%	24.51%	36.21%	17.40%
Unemployed in Civilian Labor Force	7.76%	15.24%	15.42%	6.81%	12.39%	14.80%	3.45%	12.03%	11.29%	14.91%	13.13%
Commuting via public transportation	22,814 7%	227 10%	111 8%	769 5%	670 5%	416 13%	125 2%	224 10%	1094 11%	1117 13%	814 10%
Licensed Child Care Slots	31,815	165	137	1,249	2,040	269	1,788	108	859	614	460
Households with Income less than 100% of Denver's Median Income (< $60,000)	55.77%	79.69%	74.57%	43.08%	66.59%	70.62%	20.32%	68.67%	74.75%	80.40%	69.17%
Persons age 25+ with less than 12th grade education	14.42%	51.08%	36.35%	19.15%	33.78%	22.86%	9.06%	33.55%	32.95%	38.28%	25.11%
Persons age 25+ with high school only education	18.15%	26.68%	27.45%	22.46%	31.74%	29.08%	13.07%	28.15%	30.82%	30.59%	30.13%
Persons age 25+ with some college but no degree	18.47%	10.92%	20.15%	26.26%	19.58%	22.54%	11.64%	22.71%	17.99%	14.53%	24.93%
Persons Age 25+ with College Degree (Associates or Better)	48.96%	11.32%	16.05%	32.13%	14.90%	25.53%	66.23%	15.59%	18.24%	16.60%	19.82%
Population White	473,269 74.67%	4,566 68.90%	2,501 72.64%	17,286 51.70%	17,623 52.90%	3,131 35.44%	13,232 81.14%	3,420 63.83%	14,310 60.41%	12,577 52.66%	12,553 62.50%
Population Non-Latino White	334,981 52.85%	804 12.13%	946 27.48%	7,477 22.36%	3,472 10.43%	1,572 17.79%	11,591 71.08%	1,042 19.45%	4,983 21.04%	4,128 18.92%	5,967 29.71%
Population African-American	61,868 9.76%	404 6.10%	129 3.75%	9,277 27.75%	7,950 23.89%	4,023 45.53%	1,619 9.93%	565 10.54%	3,362 14.19%	3,399 15.58%	3,861 19.22%
Population Native American	7,045 1.11%	111 1.67%	30 .87%	227 .68%	158 .47	105 1.19%	112 0.69%	189 3.53%	508 2.14%	381 1.75%	136 .68%
Population Asian/Pacific Islander	22,914 3.62%	0 0%	7 .20%	1,803 5.39%	717 2.15%	181 2.05%	579 3.55%	161 3%	1,196 5.05%	1,361 6.24%	776 3.86%
Population Other Race (Single Race Selected)	46,828 7.39%	1,468 22.15%	609 17.69%	3,096 9.26%	5,516 16.57%	750 8.49	172 1.05%	818 15.27%	3189 13.46%	3,363 15.42%	1,738 8.65
Population Latino	197,760 31.20%	5,367 80.99%	2,323 67.47%	13,705 40.99%	20,456 61.46%	2404 27.21%	1,920 11.77%	3,428 63.98%	13,486 56.93%	12,530 57.44%	9,029 44.95%
Population Non-Latino	43,6017 68.80%	1,260 19.01%	1,120 32.53%	19,727 59.01%	12,826 38.54%	6431 72.79%	14,387 88.23%	1,930 36.02%	10,202 43.07%	9,283 42.56%	11,056 55.05%
Population of 2 or More Races	21,853 3.45%	78 1.18%	167 4.85%	1,743 5.21%	1,318 3.96%	645 7.30%	593 3.64%	205 3.83%	1,123 4.74%	732 3.36%	1,021 5.08%
Adults Non-English Speaking	7.28%	25.40%	14.55%	9.96%	22.87%	8.68%	2.02%	27.22%	27.11%	28.14%	13.05%
Foreign Born	16.05%	30.74%	20.77%	25.33%	32.18%	12.52%	6.64%	36.08%	38.16%	36.49%	27.20%

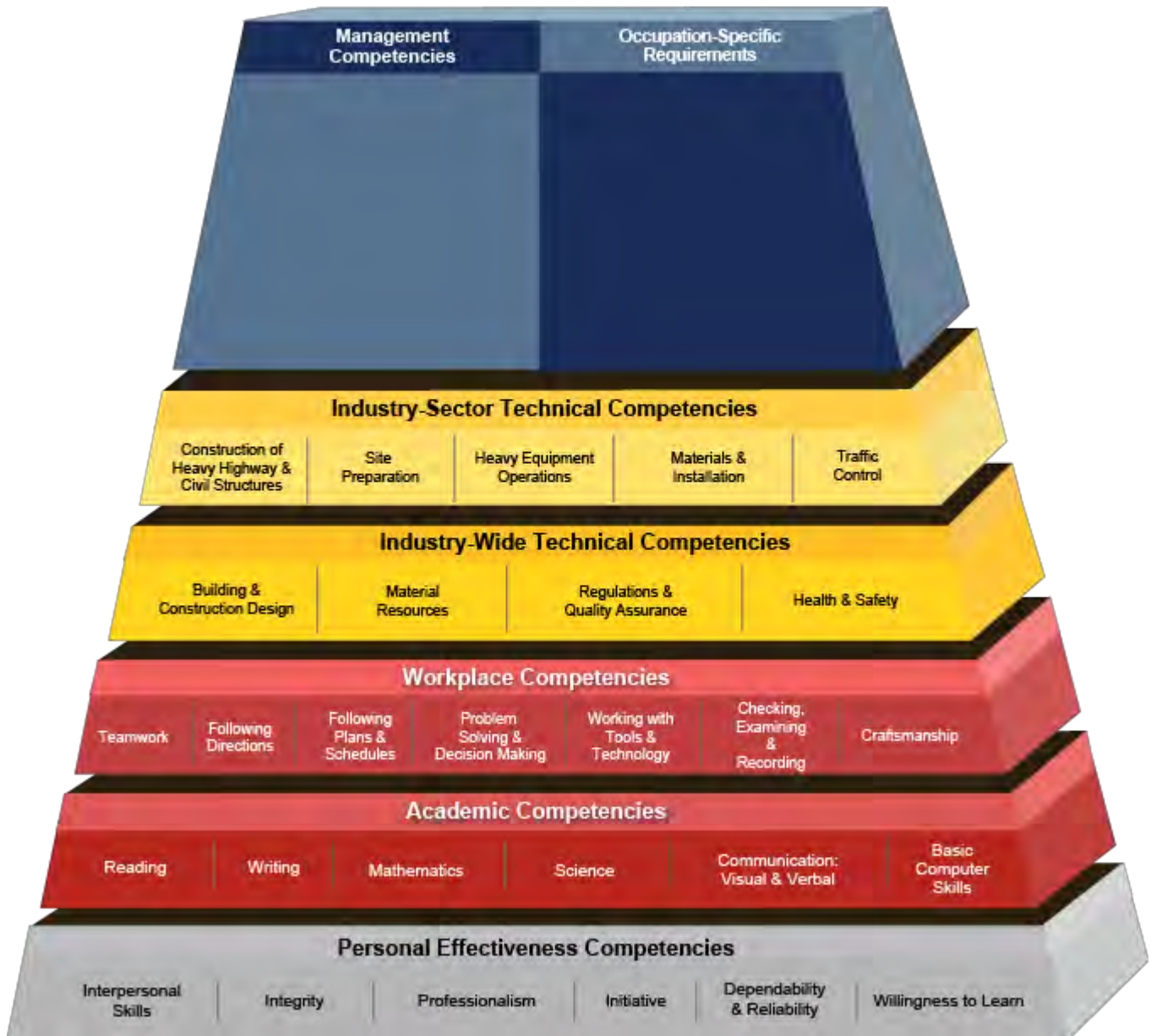| Indicators	Chaffee Park	Clayton	Cole	Derby-Commerce City	South Commerce City	East Colfax	Five Points	Sunny Side	Whittier
Attachment G				**Comparable Data Indicators – Proposed Additional Neighborhoods**				**Source: ACS 2014**	
18 years and older	3,104	3,387	3,334	6,589	14,347	8,201	12,621	8,283	4,868
Average Household Income	$63,716.81	$54,313.24	$49,051.85	$52,047.60	$47,928.34	$51,187.26	$73,880.08	$63,045.95	$73,009.38
Families in Poverty	7.55%	24.06%	25.87%	23.90%	22.64%	35.96%	25.69%	20.20%	18.48%
Unemployed in Civilian Labor Force	6.55%	18.13%	11.70%	13.40%	13.27%	14.37%	6.62%	9.19%	13.94%
% of commuting via public transportation	80 4%	175 10%	317 15%	133 4%	462 6%	563 11%	744 8%	395 8%	247 8%
Licensed Child Care Slots	32	894	636	42	904	264	848	730	398
Households with Income less than 100% of Denver's Median Income (< $60,000)	57.74%	63.71%	70.35%	67.47%	69.98%	70.39%	52.12%	56.74%	51.63%
Persons age 25+ with less than 12th grade education	21.32%	35.64%	32.32%	45.48%	39.44%	17.32%	10.54%	21.45%	13.28%
Persons age 25+ with high school only education	29.05%	25.16%	21.88%	29.59%	36.33%	25.09%	10.36%	24.84%	15.37%
Persons age 25+ with some college but no degree	18.92%	15.09%	21.62%	14.92%	13.99%	21.65%	22.45%	17.95%	22.40%
Persons Age 25+ with College Degree (Associates or Better)	30.71%	24.11%	24.17%	10.01%	10.24%	35.94%	56.65%	35.76%	48.94%
Population White	3322 83.76%	2,441 54.09%	3,631 74.73%	7,614 76.37%	17,130 79.79%	6,019 53.47%	10,976 76.64%	8,170 78.35%	4,182 63.95%
Population Non-Latino White	1457 36.74%	1,112 24.64%	1,327 27.31%	3,028 30.37%	7,028 32.74%	4,159 36.95%	9,205 64.28%	4,071 39.04%	3,046 46.58%
Population African-American	3 .83%	1,292 28.63%	633 13.03%	202 2.03%	398 1.85%	2,711 24.08%	1,979 13.82%	347 3.33%	1,861 28.46%
Population Native American	25 .63%	50 1.11%	37 76%	380 3.81%	332 1.55%	99 .88%	112 .78%	441 4.23%	63 .96%
Population Asian/Pacific Islander	30 .76%	25 .55%	26 .54%	63 .63%	11 .05%	1,070 9.57%	181 1.26%	151 1.45%	0 0%
Population Other Race (Single Race Selected)	331 8.35%	636 14.09%	297 6.11%	1,298 13.02%	3,241 15.10%	938 8.33%	728 5.08%	958 9.19%	178 2.72%
Population Latino	2362 59.56%	2,012 44.58%	2,810 57.83%	6,159 61.74%	13,940 64.93%	3,082 27.38%	2,755 19.24%	5,502 52.77%	1,499 22.92%

Population Non-Latino	1604 40.44%	2,501 55.42%	2,049 42.17%	3,811 38.22%	7,529 35.07%	8,174 72.62%	11,566 80.76%	4,925 47.23%	5,040 77.08%
Population of 2 or More Races	225 5.67%	69 1.53%	235 4.84%	413 4.14%	357 1.66%	419 3.72%	345 2.41%	360 3.45%	255 3.90%
Adults Non-English Speaking	12.79%	476	718	1,330	2,448	952	538	595	195
Foreign Born	17.73%	19.39%	23.36%	25.85%	21.79%	23.88%	8%	12.10%	9.51%

Attachment H Related industry Level Employment by Zip Code (partial)

Zipcode	Estimate; Total:	Estimate; Total: Construction	Estimate; Total: Transportation and warehousing, and utilities	Estimate; Total: Professional, scientific, and management, and administrative and waste management services	Estimate; Total: Natural resources, construction, and maintenance occupations:	Estimate; Total: Sales and office occupations: - Construction	Estimate; Total: Sales and office occupations: Transportation and warehousing, and utilities	Estimate; Total: Sales and office occupations: Professional, scientific, and management, and administrative and waste management services	Estimate; Total: Production, transportation, and material moving occupations: - Construction	Estimate; Total: Production, transportation, and material moving occupations: - Transportation and warehousing, and utilities	Estimate; Total: Production, transportation, and material moving occupations: - Professional, scientific, and management, and administrative and waste management services
80010	18261	3503	924	2321	4224	61	287	357	159	504	337
80011	20074	2698	1452	2390	3428	21	339	566	87	880	422
80019	1295	35	177	152	35	0	48	32	0	49	0
80022	19618	2301	1841	2331	2982	81	490	622	172	1118	202
80205	16411	534	508	3538	533	51	133	480	34	250	134
80207	11129	559	325	1855	483	0	123	296	44	157	159
80211	19065	1213	682	3754	1122	68	157	566	39	285	83
80216	4463	708	299	643	828	12	91	213	0	169	54
80238	6431	105	229	1359	13	29	0	238	0	61	0
80239	16562	2590	1727	1894	2903	110	515	269	100	833	154

Heavy/Highway & Civil Construction
Industry Competency Model

Management Competencies

Occupation-Specific Requirements

Industry-Sector Technical Competencies

| Construction of Heavy Highway & Civil Structures | Site Preparation | Heavy Equipment Operations | Materials & Installation | Traffic Control |

Industry-Wide Technical Competencies

| Building & Construction Design | Material Resources | Regulations & Quality Assurance | Health & Safety |

Workplace Competencies

| Teamwork | Following Directions | Following Plans & Schedules | Problem Solving & Decision Making | Working with Tools & Technology | Checking, Examining & Recording | Craftsmanship |

Academic Competencies

| Reading | Writing | Mathematics | Science | Communication: Visual & Verbal | Basic Computer Skills |

Personal Effectiveness Competencies

| Interpersonal Skills | Integrity | Professionalism | Initiative | Dependability & Reliability | Willingness to Learn |

Heavy/Highway & Civil Construction Industry Competency Model
Table of Contents

ABOUT THE MODEL

The Heavy/Highway and Civil Construction Competency Model is depicted in a graphic consisting of nine tiers. The arrangement of the tiers in a pyramidal shape is not meant to be hierarchical, or to imply that competencies at the top are at a higher level of skill. The model's shape represents the increasing specialization and specificity in the application of skills as you move up the tiers. Tiers 1-4 have been developed and are divided into blocks. The blocks represent competency areas, that is, the applied skills, knowledge, abilities essential to successful performance in the heavy/highway and civil construction industry. A table of the competency definitions and associated key behaviors follows the graphic.

Tiers 1 through 3 contain Foundation Competencies, which form the foundation needed to be ready to enter the workplace.

> **Competency** – A cluster of related knowledge, skills, and abilities that affects a major part of one's job (a role or responsibility), that correlates with performance on the job, that can be measured against well-accepted standards, and that can be improved via training and development.

Tier 1 –Personal Effectiveness Competencies are shown as hovering below the pyramid because these competencies are essential for all life roles. Often referred to as "soft skills," personal effectiveness competencies are generally learned in the home or community and reinforced and honed at school and in the workplace. They represent personal attributes that may present some challenges to teach or assess.

Tier 2 – Academic Competencies are critical competencies primarily learned in a school setting. They include cognitive functions and thinking styles. Academic competencies are likely to apply to all industries and occupations.

Tier 3 – Workplace Competencies represent motives and traits, as well as interpersonal and self-management styles. They generally are applicable to a large number of occupations and industries.

Tiers 4 and 5 contain Industry Competencies, which are specific to an *industry or industry sector.* Cross-cutting industry-wide technical competencies make it possible to create career lattices within an industry wherein a worker can move easily across industry sub-sectors. Rather than narrowly following a single occupational career ladder, this model supports the development of an agile workforce.

Tier 4 – Industry-Wide Technical Competencies represent the knowledge and skills that are common across sectors within a broader industry. These technical competencies build on, but are more specific than, competencies represented on lower tiers.

Tier 5 – Industry-Sector Technical Competencies represent a sub-set of industry technical competencies that are specific to an industry sector.

Tiers 6 through 9 represent the specialization that occurs within specific *occupations* within an industry. Information on occupational competencies is available through O*NET OnLine (http://online.onetcenter.org/).

Tier 1—Personal Effectiveness Competencies

Interpersonal Skills	Integrity	Professionalism	Initiative	Dependability & Reliability	Willingness to Learn

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1. <u>Interpersonal Skills</u>: Display skills to work with others from a range of backgrounds.

- Respect the opinions, customs, and individual differences of others
- Interact respectfully with coworkers of different cultures, genders, and backgrounds
- Work cooperatively with others on the job and display a good-natured attitude
- Resolve conflicts and differences to maintain a smooth workflow

2. <u>Integrity</u>: Display accepted social and work behaviors.

- Apply ethical standards of the industry to workplace/jobsite conduct
- Treat others with honesty, fairness, and respect
- Demonstrate respect for property of customers, employer, and coworkers
- Take responsibility for accomplishing work goals within accepted timeframes
- Accept responsibility for one's decisions and actions

3. <u>Professionalism</u>: Maintain a professional demeanor.

- Take pride in one's work and the work of the organization
- Demonstrate self-control by keeping emotions in check
- Accept criticism and deal calmly with stressful situations
- Dress appropriately for the workplace/jobsite
- Maintain appropriate personal hygiene
- Refrain from substance abuse

4. <u>Initiative</u>: Demonstrate a willingness to work.

- Pursue work with energy, drive, and effort to accomplish tasks
- Persist at a task or problem despite interruptions, obstacles, or setbacks
- Work independently and perform effectively even with little or no supervision
- Demonstrate the ability to change from one task to another
- Take initiative to seek out new responsibilities
- Establish and maintain challenging, but realistic work goals

5. <u>Dependability & Reliability</u>: Display responsible behaviors at work.

- Arrive at work fit and on time each day
- Avoid absenteeism

- Work accurately and quickly under pressure
- Complete assignments and meet deadlines
- Comply with rules, policies, and procedures such as safety, personal hygiene, personal discipline, substance abuse, employee theft, and sexual harassment

6. Willingness to Learn: Understand the importance of learning new information for both current and future problem solving and decision making.

- Participate in training opportunities
- Learn new skills related to the job
- Treat unexpected circumstances as opportunities to learn
- Accept help from supervisors and co-workers
- Seek out feedback from others to improve job performance
- Take charge of personal career development by identifying occupational interests, strengths, and opportunities
- Identify opportunities for career advancement and certification requirements

Tier 2—Academic Competencies

Reading	Writing	Mathematics	Science	Communication: Visual & Verbal	Basic Computer Skills

1. Reading: Understand written sentences and paragraphs in work-related documents.

- Read and understand technical and workplace documents such as regulations, manuals, reports, memos, forms, graphs, charts, tables, calendars, schedules, signs, and notices
- Read and understand operating directions, installation instructions, and standard operating procedures
- Recognize the meaning of specialized words or phrases unique to the industry
- Apply what is learned from written material to follow instructions and complete tasks

2. Writing: Use standard English to compile information and prepare written documents.

Organization and Development
- Communicate ideas, information, and messages which may contain technical material, in a logical manner
- Prepare documents such as written estimates, work orders, memos, and technical reports
- Fill out forms, reports, records, logs, and documents to comply with project

requirements

Mechanics
- Use standard syntax and sentence structure
- Use correct spelling, punctuation, and capitalization
- Use appropriate grammar (e.g., correct tense, subject-verb agreement, no missing words)
- Use industry terminology, acronyms, and jargon appropriately

3. Mathematics: Use principles of mathematics such as arithmetic, algebra, and geometry to solve problems.

Computation
- Add, subtract, multiply, and divide with whole numbers, fractions, decimals, and percents
- Calculate averages, ratios, proportions, and rates
- Convert decimals to fractions; convert fractions to percents

Measurement
- Take measurements of structures, distances, length, width, height, perimeter, area, angles, weight, and temperature
- Use and report measurements correctly
- Convert common units of measurement (e.g., from English to metric)
- Find level, plumb, and square
- Read gauges and measurement instruments accurately

Estimation
- Estimate sizes, distances, and quantities
- Use dimension, space, and structure calculations to estimate resources, materials, and supplies needed for project completion

Application
- Choose the right mathematical method or formula to solve a problem
- Perform math operations accurately to complete jobsite/workplace tasks
- Use various formulas for calculating the amount of materials needed to complete a task
- Calculate volumes of shapes and structures
- Calculate dimensions from blueprints

4. Science: Use scientific rules and methods to solve problems.
- Understand scientific principles critical to the construction profession: physics,

chemistry, geology and environmental science, hydraulics, hydrology, & engineering
- Understand chemical reactions such as how mortar sets
- Understand physical principles such as forces, friction, and energy
- Understand physico-chemical properties such as the effects of moisture and temperature changes on materials
- Understand weight and mass and how it relates to rigging, wind, and structure supports
- Understand and evaluate the characteristics and hazards of electricity
- Recognize and understand the interactions of compatible and incompatible substances
- Apply basic scientific principles and technology to solve problems and complete tasks

5. Communication—Visual & Verbal: Listen, speak, and signal so others can understand. Communicate in spoken English well enough to be understood by others.

Speaking & Listening
- Speak in English well enough to be understood by others
- Speak clearly and succinctly to convey information correctly
- Comprehend terminology spoken on a construction site
- Demonstrate knowledge of slang and jargon related to the different trades
- Understand and respond to verbal messages and instructions

Visual
- Use hand signals to communicate with other workers
- Identify the correct location to see and be seen as the signaler
- Recognize universal signs and symbols such as colors, flags, stakes to function safely in the workplace

6. Basic Computer Skills: Use a computer and related applications to input, store, and retrieve information.

Computer Basics
- Use basic computer hardware (e.g. PCs, printers) and software (e.g. word processing software, spreadsheet software) to perform tasks
- Understand capabilities of computers and common computer terminology (e.g., program, operating system)
- Understand computer terminology related to the construction profession (e.g., Global Positioning Systems, Geographic Information Systems, Electronic Surveying Equipment, Computer-Aided Design)
- Organize, store, and retrieve files

Preparing Documents
- Use word processing programs to create simple documents and business

communications
- Use Electronic Mail and Internet applications
- Use Spreadsheet and Database applications
- Enter data and type materials quickly and accurately
- Double check work to identify and correct typographical errors

Tier 3—Workplace Competencies

Teamwork	Following Directions	Planning & Scheduling	Problem Solving & Decision Making	Working with Tools & Technology	Checking, Examining, & Recording	Craftsmanship

1. <u>Teamwork</u>: Work cooperatively with others to complete work assignments.

- Understand the roles and responsibilities of the individual as part of a team and the hierarchy of individuals on the jobsite
- Perform responsibly as a team member and assist other members of the work team
- Effectively communicate with all members of the group or team to achieve team goals
- Effectively resolve conflicts with co-workers to maintain a smooth workflow
- Learn from other team members
- Assist others who have less experience or have heavy workloads

2. <u>Following Directions</u>: Receive, understand and carry out assignments with minimal supervision.

- Receive, interpret, understand, and respond to verbal messages and other cues
- Pick out important information in verbal messages
- Understand complex instructions
- Ask questions to clarify unclear directions
- Act upon the instruction to complete an assignment
- Comprehend and follow steps used in construction work

3. Following <u>Plans & Schedules</u>: Receive, understand, and carry out assignments to follow the planned workflow sequence.

Planning & Scheduling
- Understand the relationship between available resources and requirements of a project
- Plan work processes including matching material amounts and types of work to be done
- Create work sequences for tasks and units of work
- Allocate time and resources effectively in order to meet the established schedule
- Estimate the time required to perform activities needed to accomplish a specific task
- Establish specific goals to accomplish work in a timely manner

- Stay on schedule
- Adjust plan/schedules to respond to unexpected events and conditions
- Provide updates on complete work, materials used, and materials needed for project completion

4. Problem Solving & Decision Making: Apply critical-thinking skills to solve problems encountered on the work site.

Identify the Problem
- Recognize the existence of a problem
- Identify the nature of the problem and define critical issues
- Locate, obtain, and review information relevant to the problem

Generate Alternatives
- Generate a variety of approaches to the problem
- Think creatively to develop new ideas for and answers to work related problems
- Use logic and reasoning to identify the strengths and weaknesses of alternative solutions or approaches to problems

Choose and Implement a Solution
- Choose the best solution after contemplating approaches to the problem
- Commit to a solution in a timely manner
- Use strategies, tools, resources, and equipment to implement the solution
- Observe and evaluate the outcomes of implementing the solution to assess the need for alternative approaches and to identify lessons learned

5. Working with Tools and Technology: Select, use, and maintain tools and technology to facilitate work activity.

Select and Use Tools & Technology
- Identify the hand and power tools appropriate to the work site and to the trade
- Select tools, technology, machinery, and equipment appropriate for a given job
- Demonstrate appropriate use of tools to complete work functions
- Identify potential hazards related to the use of tools
- Operate hand or power tools and equipment in accordance with established operating procedures and safety standards

Keep Current
- Demonstrate an interest in learning about new and emerging materials, tools, and technologies

Troubleshoot

- Perform routine maintenance on tools, technology, and equipment
- Determine causes of operating errors and decide what to do about it
- Troubleshoot maintenance problems in accordance with established procedures

6. Checking, Examining, & Recording: Enter, transcribe, record, store, or maintain information in written or electronic format.

- Examine structures and systems to determine need for repair
- Diagnose malfunctioning systems, apparatus, and material components
- Use checklists to track preventative maintenance
- Complete and maintain preventative maintenance records
- Monitor work and record progress of the project
- Keep track of details to ensure work is performed accurately and completely
- Keep logs, records and files that are up-to-date and readily accessible

7. Craftsmanship: Recognize the responsibilities and personal characteristics of a professional craftsperson.

Physical Aptitude
- Recognize the physical aptitudes necessary to perform critical work functions
- Demonstrate manual dexterity, balance, and eye-hand coordination
- Demonstrate sufficient stamina to complete critical work functions (e.g., complete full shift, walking, carrying heavy objects for extended periods)

Trade Knowledge
- Stay up-to-date technically and apply new knowledge and skills
- Perform quality work meeting or exceeding the standards of the industry
- Exert effort toward task mastery

Tier 4—Industry-Wide Technical Competencies

Building & Construction Design	Material Resources	Regulations & Quality Assurance	Health & Safety

1. Building & Construction Design: Understand the steps involved in building construction projects (e.g., understanding & interpreting drawings).

Design

- Recognize basic engineering and architectural principles in structures
- Identify components of building systems needed to complete a construction project
- Understand design techniques, tools, and principles involved in the production of precision technical plans, blueprints, drawings, and models
- Interpret documentation, detailed instructions, drawings, or specifications about how devices, parts, equipment, or structures are to be fabricated, constructed, assembled, modified, maintained, or used

Blueprints/Drawings/Specifications

- Understand rough and detailed scale plans for structures based on sketches, engineering calculations, specification sheets and other data
- Recognize elements and symbols of blueprints, drawings, and specifications
- Interpret dimensions, symbols, types of lines, scales, and views, including elevations, plans, and sections.
- Visualize three-dimensional forms from two-dimensional drawings
- Locate worksite features included on a construction plan
- Convert scaled blueprint drawing measurements to full dimensions for a given project

Site Planning

- Apply surveying methods to problems of leveling, line direction, measurement of angles, measurement of distance, and transverse computations
- Demonstrate knowledge of zoning, property lines, utilities, building line, setback, building corners, and elevation
- Identify the actual location/elevation
- Use lasers/levels/transits to check alignment and elevations
- Identify specific hazards, such as cave-ins, and be aware of them while performing excavation tasks
- Perform benching and sloping methods to prevent cave-ins
- Install shoring and shielding systems to protect workers from cave-ins
- Demolish and/or disassemble and remove structures and buildings prior to repair or new construction

2. Material Resources: Identify, move, store, and supply construction and building materials for all types of construction activities.

Identification

- Identify materials necessary to complete tasks in the trade
- Describe the structure and properties of various materials
- Evaluate waste of resources/materials
- Evaluate necessity for additional/alternative resources/materials

- Differentiate between compatible and incompatible substances
- Understand criteria used for material selection

Use
- Handle, install, position, move, store, and secure materials properly
- Demonstrate knowledge of various material finishing techniques
- Identify and perform material testing techniques
- Understand appropriate transport methods of various construction materials
- Use appropriate combinations of building materials and components

3. Regulations & Quality Assurance: Comply with regulations and building codes, and apply industry standards to ensure quality work.

Regulations
- Be aware of and comply with governmental regulations, local and state building codes, contract provisions, and construction standards
- Use information given in regulations and codes correctly
- Pass job inspections and comply with regulations at all times

Liability Management
- Inspect a construction work site and correctly identify potential hazardous conditions
- Identify strategies to mitigate hazards and take appropriate remediation measures, including posting proper warning signs and fencing off dangerous work areas
- Document project and work site inspections
- Take steps to prevent loss of materials during all stages of a project

Quality Assurance
- Complete construction projects according to specified standards of quality and performance
- Evaluate efficiency and effectiveness of a project/job
- Ensure work is done well, safely, and according to code and customer requirements
- Inspect job sites, equipment, structures, or materials to identify the cause of errors or other problems or defects
- Inspect structures and systems for structural quality, general safety, and conformance to specifications and codes
- Conduct tests and inspections of products or processes to evaluate quality

Environmental Impact Mitigation
- Recognize and abate all types of environmental hazards
- Operate, maintain, and interpret data from air sampling equipment
- Set up and maintain decontamination systems

- Remove, package, dispose of, and document hazardous materials
- Take steps to prevent/control wind or water erosion in land development and construction
- Take steps to minimize negative impact to wetlands

4. <u>Health & Safety</u>: Recognize and mitigate safety hazards including hazardous materials, environmental hazards, and accident conditions on a construction site.

Personal Safety
- Select, inspect, and use personal protective equipment such as respiratory protection and fall protection equipment
- Work to create a hazard-free, accident-free environment
- Know effects of and how to deal with temperature extremes and weather conditions
- Follow rules and procedures for working safely in confined spaces and at heights.

Safety Procedures
- Observe rules and regulations to comply with personal and jobsite safety standards
- Identify workplace/jobsite environmental hazards to promote workplace/jobsite safety
- Understand shop and worksite safety, fire safety, electrical safety, and chemical safety
- Identify ladder and scaffold safety practices and procedures
- Understand dangers of construction excavation and follow appropriate safety measures
- Understand and follow basic hand signals relevant to moving vehicles, equipment, and materials
- Demonstrate knowledge of hazardous properties of materials such as radiation, toxicity, flammability, reactivity, corrosivity, and limits of fire resistance exposure
- Complete and file accident reports in accordance with required standards
- Use Material Safety Data Sheets (MSDS) information to manage, use, and dispose of hazardous materials

Tier 5—Industry-Sector Technical Competencies

Construction of Heavy/Highway & Civil Structures	Site Preparation	Heavy Equipment Operations	Materials & Installation	Traffic Control

1. <u>Construction of Heavy/Highway & Civil Structures</u>: Apply knowledge of heavy/highway and civil materials and methods in the construction of different types of projects.

Utility Construction
- Apply knowledge of materials, methods, and techniques to construct major utility systems such as power plants, water, sewer, communication, electrical, nuclear power, refineries, and natural gas facilities

Road Construction and Maintenance
- Understand road construction components to perform road marking and road pavement operations
- Install roadside fixtures, utility poles, pre-cast concrete crash barriers, noise barriers, and raised pavement markers

Bridge Construction and Maintenance
- Understand bridge components and how to construct different types of bridges
- Apply knowledge of the purpose, structure, construction methods, and materials in constructing different types of bridges
- Construct bridge substructures and superstructures

Other Major Construction
- Apply knowledge of materials, methods, and techniques in the construction of tunnels, canals, dams, railroads, pipelines, mass-transit facilities, golf courses, and wetlands

2. <u>Site Preparation</u>: Perform clearing, excavating, and earthmoving operations.

Land Alteration
- Carry out grubbing methods (e.g., removal of trees, stumps, plants, and rocks)
- Perform grading procedures (e.g., altering land surfaces by cutting, filling, and/or smoothing to meet a designated form and function)
- Undertake soil remediation procedures (e.g., protecting and restoring the soil's structure)

Below Grade Construction
- Understand types and properties of soil
- Install excavation support systems, such as trench sloping and shoring
- Identify underground piping materials and fittings and carry out joining methods for underground pipe
- Install box culverts and catch basins
- Install underground pipe
- Understand the different colors used for utility marking
- Know and apply the rules for digging around various utilities
- Know the procedures to follow if a utility (gas, power, water, etc.) line is hit during

digging

Earthmoving
- Understand types and properties of soil
- Perform a variety of earthmoving methods including stripping top soil; excavation; transportation of construction materials; placing and backfilling; watering, mixing, spreading, and leveling of materials; and compaction
- Perform soil stabilization methods

3. Heavy Equipment Operations: Properly operate and maintain equipment specific to heavy construction.

Trucks
- Understand the use of rigid frame trucks: dump trucks, asphalt distribution trucks, broom trucks, transit-mix trucks, fuel/lubrication trucks, maintenance trucks, water trucks
- Understand how to use truck components and controls
- Perform basic safety checks on trucks
- Use appropriate types of tractor trailer trucks and trailers such as: bulk haulers, flat bed trailers, low boy trailers, belly dump trailers, side dump trailers, end dump trailers, live bottom trailers, tankers
- Understand aspects of truck driving related to off road driving and construction site driving including hours of service rules
- Obtain and maintain a Commercial Driver's License (CDL), including following rules and procedures
- Understand and apply the safety rules for operating trucks on a construction site

Heavy Equipment
- Maintain equipment in good condition
- Operate controls safely and efficiently
- Diagnose and perform minor repairs on equipment failures
- For the task at hand, use the correct type and size of equipment such as: compaction equipment, loaders, backhoe loaders, scrapers, bulldozers, excavators, telescoping excavators, motor graders, skid steer loaders

Cranes and Forklifts
- Understand the uses of different types of construction cranes
- Perform crane inspections
- Safely perform crane operations
- Safely operate forklifts
- Demonstrate good lifting practices and proper rigging
- Identify and use proper hand signals, slings, rigging hardware, hitch configurations

- Understand basic load-handling safety practices
- Demonstrate how to work out signal use with spotters

4. Materials & Installation: Materials, methods, and techniques used in the construction of heavy/civil projects.

Concrete Construction
- Apply knowledge of concrete properties when performing methods of mixing, curing, and finishing
- Use structural concrete for bridge, road, and utility construction
- Level, smooth, and shape surfaces of freshly poured concrete
- Knowledge of reinforced concrete and structural steel systems (e.g. vertical and horizontal loads on beams and columns, bending, shear, compressive and tensile stresses, and deflection analysis)

Steel Construction
- Install structural steel in the construction of bridges, roads, and utilities
- Erect, bolt, rivet, and/or weld fabricated structural metal members that support the structure during and after construction
- Set steel bars (rebar) or steel mesh in forms to strengthen concrete buildings, bridges, and highways

Pipefitting
- Install and repair high pressure pipe systems
- Assemble, install, and maintain pipes to carry liquids, steam, compressed air, gases, and fluids needed for processing, manufacturing, heating, and cooling
- Measure, cut, bend, and thread pipes, joining sections together using elbows, "T" joints, or other couplings

Paving
- Operate concrete paving equipment, including pavers, slip-form pavers, and texture/curing machines
- Perform concrete paving operations including grade control, making joints, hand paving, and reinforcement and meet concrete paving quality control standards
- Perform hot mix asphalt paving operations including grade control, raking, and compaction and meet hot mix asphalt quality control standards

5. Traffic Control: Understand, construct, and implement traffic control to move the general public around or through construction sites.

Traffic Control
- Implement traffic control plans and techniques

- Lay out, construct, and maintain fences and traffic barrier systems
- Install barricades as needed at the worksite
- Direct, flag, and signal public and construction vehicles in work zones
- Demonstrate knowledge of the Uniform Traffic Control Code or state equivalent for flagging and signage requirements
- Understand and use proper flagging techniques (control traffic with stop-slow bat)
- Set up and maintain light sources when working at night
- Follow lighting plans

Resources Reviewed

#	Organization	Resource	Web Address
1	Alpena Community College (CBJTI)	Concrete Technology Program; Apprentice-Electrical; Computer-Aided Drafting & Design Engineering Technology; Welding Fabrication Certificate	http://www.alpenacc.edu/programs/programs_list.htm
2	American College of Building Arts (HGJTI)	Architectural Stone; Carpentry; Masonry; Ornamental Ironwork; Plasterwork; Timber Framing (Course Descriptions)	http://www.buildingartscollege.us/_media/ACBA%20Catalog_06-07.pdf
3	American Council for Construction Education	Standards and Criteria for Accreditation of Postsecondary Construction Education Degree Programs	http://www.acce-hq.org/documents/DOCUMENT103080906.pdf
4	Arizona Department of Education	Construction Technologies (Competency Model)	http://www.aztechprep.org/levels/Level-III/ConstTechs/ConstTech/CTc&i7-03.pdf
5	Arizona Western College (CBJTI)	Industrial Graphics-Drafting/CAD; Welding	http://www.azwestern.edu/learning_services/instructional_divisions/occupational_degrees.html
6	Associated General Contractors of America (HGJTI)	Craft and Non-craft Job Descriptions / Core Standards for Construction Craft Laborers (hard copy)	http://www.agc.org/page.ww?section=Education+%26+Training&name=Job+Descriptions
7	B.C. Road Builders & Heavy Construction Association	Road Building and Heavy Construction Foundation Course	http://itabc.ca/forms/Foundation/outline/Road%20Builder%20Foundation%20Outline.pdf
8	Bechtel Corporation	Bechtel Core Competencies	http://www.bechtel.com/core.htm
9	California Department of Education	Building Trades and Construction Industry Sector (Curriculum Model)	http://www.cde.ca.gov/re/pn/fd/documents/careertechstnd.pdf
10	Carpenters Joint Apprenticeship Program (HGJTI)	Apprenticeship Course Offerings	http://www.cjtf.org/CJAP/car_courses.htm
11	Chicago Women in Trades (HGJTI)	Technical Opportunities Program Curriculum	http://www.chicagowomenintrades.org/artman/publish/article_206.shtml
12	Civil Skills & Technology Centre	Training Course Descriptions	http://www.civilskills.com.au/courses_listings.htm
13	Cleveland State Community College (CBJTI)	Competencies for Industrial Technology-Construction Technology, Drafting & Design	http://www.clevelandstatecc.edu/academics/divisions/community_campus/techprep/pdfdocs/competencies.pdf

14	Colton-Redlands-Yucaipa Regional Occupational Program	Construction Technology Course Competency List	http://www.cryrop.k12.ca.us/PDFs/StudentCompetencies.pdf
15	Connecticut Business & Industry Association	Construction Technologies & Design (Industry Skills Standards)	http://www.cbia.com/ed/STC/career_explorations/career_explor_info/zpdf/industry_standards/ConstructionIntro.PDF
16	Florida Community College at Jacksonville (CBJTI)	Building Construction Technology; HVAC Technology; Carpentry Management; Construction Electricity Management; Plumbing Management; Applied Welding Technologies	http://www.fccj.org/resources/catalogs/2006_2007/degree_cert/construction/index.html
17	Frederick Community College (CBJTI)	Construction Management; Computer Aided Drafting	http://www.frederick.edu/programCourses/careerprograms/index.cfm?documentid=311
18	Georgia Department of Education	Construction (Curriculum Model / Educational Program Model)	http://www.doe.k12.ga.us/_documents/curriculum/edtech/construction.pdf
19	Georgia Department of Education	Heating, Ventilation, Air Conditioning, and Refrigeration (Education Program Model)	http://public.doe.k12.ga.us/DMGetDocument.aspx/heating.pdf?p=4BE1EECF99CD364EA5554055463F1FBB77B0B70FECF5942E12E123FE4810FFF55BC103AB8DEE33A50247CE48777E1C4E&Type=D
20	Halliburton Training Center	Field Technology Overview	http://www.lgc.com/careers/univ_tec.jsp
21	Home Builder's Institute (HGJTI)	Residential Construction Superintendent Designation -- The Curriculum	http://www.hbi.org/page.cfm?pageID=117
22	Home Builder's Institute (HGJTI)	Residential Plumbing Standards; Residential Heating, Ventilation, and Air Conditioning Standards; Residential Carpentry Standards; Residential Electrician Standards	www.residentialacademy.com/skillstandards/formula.aspx
23	Honolulu Community College (HGJTI)	Program Technical Standards	http://tech.honolulu.hawaii.edu/carp/pdf/carp_techstandards.pdf
24	International Union of Operating Engineers	Training Program Descriptions	http://www.iuoe.org/
25	Job Corps Construction Training Achievement Records	Bricklaying, Carpentry, Computer Assisted Drafting, Electrician, Facilities Maintenance, Fence Installer, Floor Covering Installer, Heavy Construction Equipment Mechanic, Heavy Equipment Operator, Painter, Plumber, Tile Setter,	http://jccdrc.jobcorps.gov/CTT/construction/construction-tars

		Welding	
26	Kansas Department of Education	Trade and Industry Program Standards (Course Competencies)	http://www3.ksde.org/sfp/cate/industry/trade_industry_program_standards_053105.pdf
27	Laborers - AGC (Education & Training Fund)	Core Standards for Construction Craft Laborers, Skill Standards for Open Cut Pipe Laying, Concrete Worker Skill Standards, Lead Abatement Worker Skill Standards	Hard Copy
28	Laborers - AGC	Core Standards for Construction Craft Laborers	Hard Copy
29	Laborers - AGC	Course Listings	http://www.laborers-agc.org/whatwedo_coursedescription.asp
30	Massachusetts Department of Education	Vocational Technical Education Framework: Facilities Maintenance	http://www.mccte.org/docs/Facilities_Management_March06.pdf
31	McMurry Training Center	Construction & Energy Programs	http://www.mcmurrytrainingcenter.com/industries.aspx?IsStudent=true
32	Montana State University Billings College of Technology (CBJTI)	Construction Technology-Carpentry; Drafting & Design Technology; Heating, Ventilation, AC & Refrigeration; Process Plant Technology; Welding & Metal Fabrication	http://www.cot.msubillings.edu/Programs.htm
33	National Center for Construction Education and Research	Construction Competencies / Objectives	http://www.nccer.org/assessments/objcomp.asp
34	National Highway Institute	Construction Competency Matrices	http://www.nhi.fhwa.dot.gov/tccc/matrix01.htm
35	National Highway Institute	Construction Competencies Matrices	http://www.nhi.fhwa.dot.gov/tccc/matrix01.htm#_Toc90380260
36	National Park Service	Essential Competencies: Carpenter, Engineering Equipment Operator, Engineer (Highway)--Construction, Historical Craftsperson (Mason, Carpenter, Painter, etc.)	http://www.nps.gov/training/npsonly/npsescom.htm
37	National Training Information Service (AU)	Training Package Competency Units	http://www.ntis.gov.au/Default.aspx?/trainingpackage/BCC03

38	NCCER	Highway/Heavy Construction Competencies & Objectives	http://www.prenhall.com/crafttraining/C-HighwayHeavy.pdf
39	New Jersey Next Stop…Your Career	Career Paths & Key Occupations	http://www.njnextstop.org/workarea.asp?workid=7
40	Northern Industrial Training	Highway/Heavy Construction Course -- Overview	http://www.nitalaska.com/servlet/content/37.html
41	Ohio Department of Education & Ohio State University	Ohio Construction Technologies Competency Profile	http://eric.ed.gov/ERICDocs/data/ericdocs2/content_storage_01/0000000b/80/23/0d/3a.pdf
42	Oregon Department of Education	Construction Curriculum	http://www.ode.state.or.us/search/page/?id=1039
43	Oregon Department of Education	Design/Pre-Construction Curriculum	http://www.ode.state.or.us/search/page/?id=1038
44	Palm Beach Community College (CBJTI)	Building Construction Specialist; Construction Continuing Education	http://www.pbcc.cc.fl.us/x3222.xml?id=33
45	Personnel Decisions Research Institute (PDRI)	Draft Competencies for Heavy/Civil	Hard Copy
46	Piedmont Virginia Community College (CBJTI)	Construction Academy--Course Schedule	http://www.pvcc.edu/docs/Spring2007WorkforceServicesSchedule.pdf
47	Planmatics, Inc.	Construction Industry Competency Model: Analysis of Commonalities and Gaps	Hard Copy
48	Salish Kootenai College	Highway Construction Training Program (HCT)	http://www.skc.edu/academic_programs/highwayconstruction.html
49	Savannah Technical College (CBJTI)	Air Conditioning Technology; Drafting; Electrical Construction & Maintenance; Welding & Joining Technology	http://www.savannahtech.edu/instructional_services/programs/index.html
50	State Fair Community College	Programs of Study: Building Materials Merchandising, Computer Aided Drafting Technology, Construction Technology	http://www.sfcc.cc.mo.us/Include/Webmaster/2006-2008Catalog_ProgramsofStudy.pdf
51	University of Central Missouri	Construction Management	http://www.cmsu.edu/x71009.xml
52	US Department of Education (OVAE)	Career Cluster Resources for Architecture and Construction	www.careerclusters.org

53	US Department of Labor -- O*NET	Details Reports for: Rough Carpenters, Construction Carpenters, Electricians, Operating Engineers and Other Construction Equipment Operators, Pipe Fitters and Plumbers, Construction Laborers, Heating and Air Conditioning Mechanics, Brickmasons and Blockmasons, Cement Masons and Concrete Finishers, Welders-Fitters, Construction and Building Inspectors	http://online.onetcenter.org/
54	US Department of Labor -- Office of Apprenticeship	Work Process Schedules [*Air Force resources--not on line]: Maintenance Technician (2003-11); Pavement Striper (2002-03); Hydro Blaster/Vacuum Technician (2006-12); Ironworker (2006-16); Operating Engineers (2001-07); Electrician (2002-11); Masonry (2001-09); Carpenters (2005-23); Supervisory Control and Data Acquisition Technician (2005-20); Cabinetmaker (2005-23); *Field Service Engineer; *Heating and Air Conditioning Installer/Service; *Pavements and Construction Equipment--Operating Engineer; *Structural--Carpenter; *Utilities Systems--Plumber	http://www.doleta.gov/oa/whatsnew.cfm
55	US Department of Labor --Bureau of Labor Statistics	The 2006-2007 Career Guide to Industries (Construction)	http://www.bls.gov/oco/cg/print/cgs003.htm
56	YouthBuild USA (HGJTI)	Construction Training Curriculum (unit level only)	http://www.youthbuild.org/site/c.htIRI3PIKoG/b.1360529/apps/s/content.asp?ct=1975009

Attachment J   Reviewed Local Hire Policies and Targeted Hire Initiatives

<u>Transit Infrastructure</u>

Alameda Rail Corrido Construction Job Training & Employment program (Project Labor Agreement—PLA)

LA Metro—Construction Career Policy (Project Labor Agreement—PLA)

Workforce Initiative Now (WIN) Contract Requirements for FastTrack Projects

<u>Vertical Building</u>

City of Portland (Community Benefits Agreement—CBA)

LA County Department of Public Works (ordinance)

Boston Public Schools—Our Schools Our Future (local hire on summer maintenance projects)

City of Richmond (ordinance)